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A SPATIAL READING OF MODULATED LIBERATION IN CORPORATE ARCHITECTURE

ELİF ECE ILGAZ, NURBİN PAKER KAHVECİOĞLU

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This research is based on Elif Ece Ilgaz's ongoing Master thesis, supervised by Prof. Dr. Nurbin Paker Kahvecioğlu at the Architectural Design Master Program of Istanbul Technical University.

ABSTRACT

The office is a dynamic instrument of power, which throughout history, evolved from a disciplinary enclosure to a modulatory apparatus that regulates behavior. Moving beyond the notion of the office as a neutral workspace, this research discusses how architectural forms actively mediate power relations within organizational contexts. The conceptual trajectory is built around five thematic layers that chronologically map the development of the open office. It begins with early twentieth-century disciplinary open-plan layouts, moving to the emergence of immaterial labor within a leisure-oriented post-industrial welfare state, then considers the integration of control theory into organizational thinking, further exploring the adoption of communication-driven methods rooted in cybernetic thinking, and ending with the spatial realization of these ideas: *Bürolandschaft* (office landscape) in post-war Germany.

Central to this study is the research question: how do landscaped office plans reflect the spatial traces of power relations in workspace organization? To address this, a set of original Bürolandschaft plans from the 1960s and 1970s is analyzed, revealing how shifts in labor practices and management theory are embedded in architectural form. The analysis shows that offices are designed not only to accommodate work, but to guide circulation, increase efficiency, and balance autonomy with self-regulation. Bürolandschaft is read as a flexible spatial innovation in contrast to rigidity and rationality of modernizm, an embodiment of organizational principles based on cybernetics, a response to evolving expectations of communication and collaboration, a materialization of labor ideology in the post-industrial workplace, and a pioneer to modern open-office practices.

KEYWORDS: bürolandschaft, office landscape, cybernetics, immaterial labor, control society

1. CONCEPTUAL TRAJECTORY

This research emerges from a fundamental contradiction apparent in popular media: the depiction of the office cubicle as a symbol of dystopian, hostile work environments, characterized by monotony and alienation. This widely accepted cultural image stands in opposition to the historical reality that these flexible office systems, known as *Bürolandschaft* (office landscape), evolved from a movement intended to liberate the worker and humanize the workplace.

Two recent portrayals of bureaucratic labor, embodying how contemporary culture imagines the office as a site of psychological confinement, are TV series *Andor (2022)* and *Severance (2022).* In *Andor* (Figure 1a), the Imperial Security Bureau's (ISB) vast and sterile open plan presents an endless field of uniform desks. Its muted palette and harsh lighting reinforce an authoritarian system that portrays white-collar labor as a form of punishment. The ISB office becomes a carefully sanitized environment where individuality is dissolved and workers function as expandable components. The monotonous desk job is pictured as a discipline method more agonizing than a prison sentence for the demoted imperial officer Syril Karn. *Severance* (Figure 1b) deploys a similarly oppressive spatial language: an uncanny, hyper-controlled interior with green carpeting, cold fluorescent lights on a suspended ceiling, and white walls framing a four-person workstation placed right at the center of an otherwise empty office floor. This space visualizes the estrangement of employees whose work seems senseless yet "*mysterious and important*" (a line often repeated by the main protagonist of the show, Mark S., stressing the strange air of the Severed Floor) turning routine administrative tasks into a surreal and disorienting program. Across both examples, the open office becomes a dystopian mechanism of control and psychological torment, using architectural monotony and spatial standardization to communicate the dehumanizing conditions of contemporary immaterial labor.

a. b.

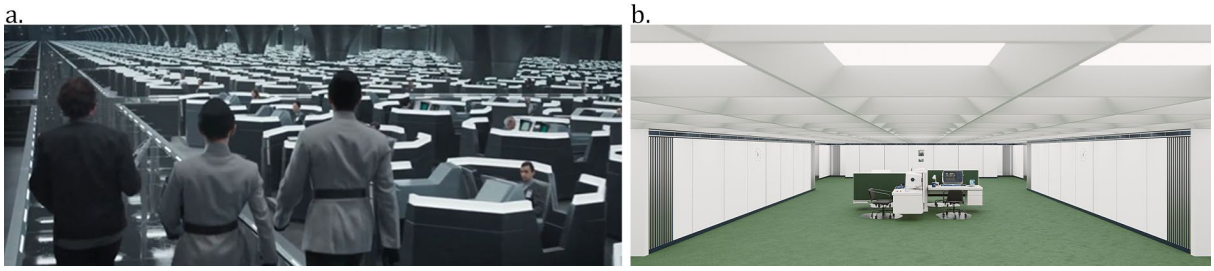


Figure 1. a: Cubicles in the open plan space of the Imperial Security Bureau (ISB) (Screenshot from Tony Gilroy's Andor, 2022). b: Macrodata Refinement (MDR) department at the Severed Floor of Lumon Industries (Onur Inci, 2025).

Beginning from this critical context, present study examines how the office has shifted from a disciplinary enclosure to a modulatory apparatus of control, arguing that architectural forms shape and distribute power, instead of simply accommodating it. The conceptual trajectory of the paper (Figure 2) is structured around five thematic layers that trace the chronological evolution of the open office: the emergence of early twentieth century disciplinary open plan layouts, the transition towards immaterial labor within a leisure-oriented post-industrial society, the introduction of control theory into organizational thinking, the growing influence of communication-driven methods rooted in cybernetics, and the spatial realization of these shifts in the form of Bürolandschaft. This framework allows the paper to present how evolving organizational theories spatially materialized.

To explore the research question "how do landscaped office plans reflect the spatial traces of power relations in workspace organization," this study analyzes a set of original Bürolandschaft plans from the 1960s to 1970s. This approach assumes that changes in labor and management thinking leave visible signs in the architectural plans themselves, showing that the office is not just a neutral workspace but a tool for guiding behavior. Bürolandschaft is therefore considered not only as a spatial innovation but also as a response to shifting expectations about communication, efficiency, and worker autonomy. It is situated

within a broader discussion of how power operates through spatial organization inside the flexible workplace that shaped the modern open office.

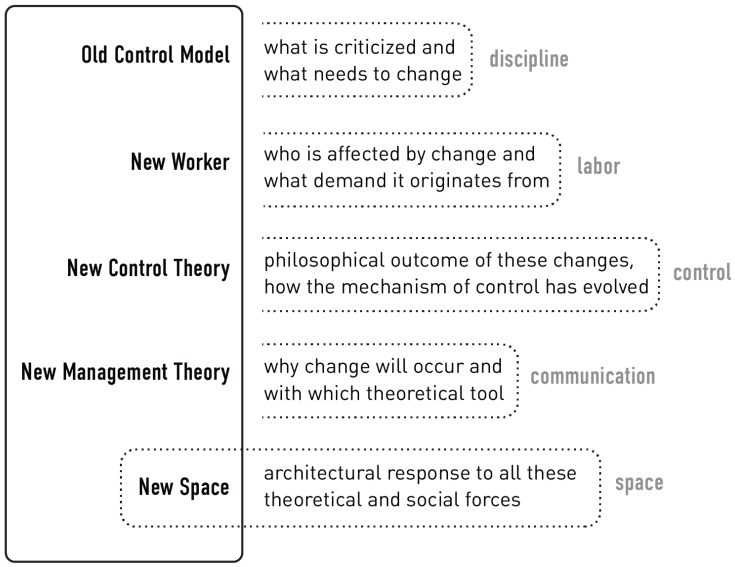


Figure 2. Conceptual trajectory of the study

1.1 From Geometrical Discipline to Flexible Workspace

The office has long been regarded as an administrative extension of state or corporate power, with early examples such as the Palazzo Uffizi in Florence or the Bank of England (Caruso St John Architects & Mozas, 2017). Yet, it was the late nineteenth century's communication technologies and new construction methods that concentrated clerical labor in large administrative buildings. In North America, this shift coincided with the rise of the skyscraper, whose steel-frame structure and deep floor plates became architectural emblems of industrial capitalism.

By the early twentieth century, the office had been functioning as an institutional and material enclosure in which disciplinary power was exercised. Efficiency centered management theories like Taylorism reshaped the white-collar workplace according to principles of measurement, visibility, and managerial control (Casteel, 2024). Offices began to mirror the factory floor with employees working under conditions similar to industrial production, seated in rows of desks under the direct gaze of a supervisor (Duffy, 1997). This supervisor's desk or executive office was often located on an upper level mezzanine, offering a vantage point on the work floor as well as the workers, and visually reinforcing the hierarchical structure embedded into the plan scheme. Architects like Frank Lloyd Wright attempted to soften this mechanistic logic, most notably in the Larkin Building (1903–1905) and later in the Johnson Wax Headquarters (1937–1939), yet even these innovations remained bound to hierarchical and efficiency-driven organizational models.

Following World War II, American corporations required both larger administrative environments and stronger spatial expressions of corporate identity (Fraser, 2007). As a response, high-rise towers in expensive city centers and suburban office campuses were built. Use of glass defined the aesthetic of corporate modernism and represented transparency however, only lower-level workers were visible while executives remained secluded (Graham & Hurst, 1987).

As critiques of functionalist modernism intensified in the 1950s and 1960s, flexibility became a central architectural concern. This era is identified as the moment when designers recognized that buildings must accommodate evolving, unpredictable uses. Figures such as Walter Gropius, Louis Kahn, James Stirling, and John Weeks debated how to achieve adaptability (Forty, 2004), while Team X members, especially Aldo van Eyck and Herman Hertzberger, warned against abstract neutrality (van den Heuvel, 2018). To avoid the concept of flexibility morphing into a universal principle, Hertzberger proposed "polyvalency" instead:

specific architectural forms that can support multiple uses without dissolving into formless openness, a principle he explored in the community-oriented office building Centraal Beheer (1970–1973).

These ideas set the stage for the development of Bürolandschaft in 1950s Germany, at a moment when office work was beginning to shift toward more communication and knowledge-based forms of labor. As post-war economies changed, rigid geometric layouts no longer matched the needs of workers whose tasks depended on information exchange, collaboration, and constant adjustment. The Quickborner Team responded to this new reality by designing flexible offices around communication flows rather than hierarchy, creating more open and fluid environments shaped by movement and interaction.

1.2 Work Beyond Industrial Production

The decades after the Second World War reshaped not only economic production but also everyday life. As white-collar employment expanded and work became increasingly centered on communication, knowledge, and creativity, value began to emerge from activities that were no longer tied to physical production but to information and social interaction. This shift towards *immaterial labor* happened in parallel with the rise of the welfare state and the emergence of a leisure-oriented society, both of which blurred the boundaries between work and personal life. Together, these developments produced a new kind of worker whose identity extended beyond the factory floor and into the office, the home, and even newly created spaces of recreation (Rumpfhuber, 2015). In this context, free time itself became a governed domain, structured, planned, and shaped to produce certain behaviors and social outcomes.

Immaterial labor refers to forms of work that create value through communication, information processing, and cultural production rather than through the act of physical manufacturing. Maurizio Lazzarato (2016) distinguishes two key dimensions: informational labor, which involves highly communicative, computer mediated tasks and cultural labor, which produces social meanings such as trends, tastes, and public opinion. Such labor is often invisible, normalized as everyday activity rather than recognized as work.

While immaterial labor was transforming the nature of work, the welfare state was reshaping the structure of everyday life. Emerging from the late nineteenth century social reforms and expanding rapidly after 1945 (Figure 3), the welfare state invested heavily in housing, health, education, and infrastructure, believing that planning and architecture could secure collective well-being (Gosseye & Heynen, 2013). Its “golden age” from the mid twentieth century onward coincided with new labor legislation that limited working hours and created evenings, weekends, and extended holidays. As free time increased, governments began constructing playgrounds, sports facilities, youth centers, parks, and they treated leisure as something that should be guided and cultivated rather than left entirely to market entertainment.

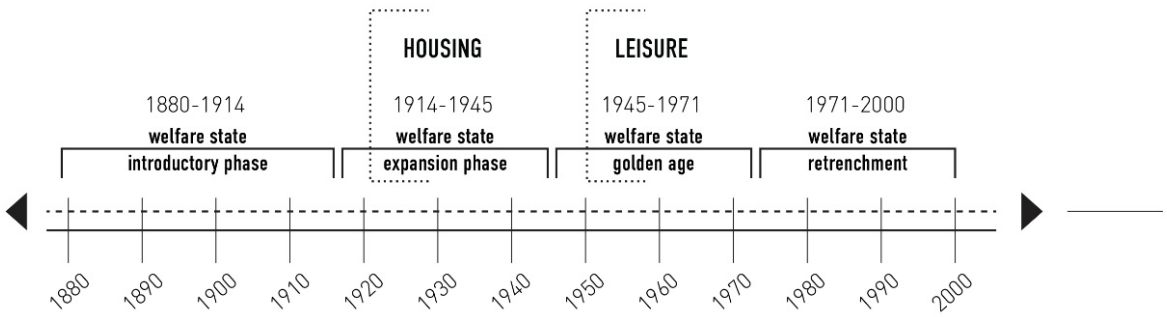


Figure 3. Brief timeline of welfare state development in Europe, adapted from The Oxford Handbook of The Welfare State (2010)

The welfare state expansion of leisure was not simply about rest: it was a means of shaping citizens, supporting personal development, encouraging sociability, and sustaining the wider economic system. Leisure thus became a continuation of labor by other means, its spaces carefully organized to cultivate

certain forms of behavior and productivity (Wells, 2020). Seen from this perspective, Bürolandschaft's integration of lounges, informal meeting zones, and break rooms located inside the workspace operated as part of this same biopolitical logic. By bringing moments of leisure and social interaction into the office plan, these spaces were not positioned as simple amenities but tools for directing communication, shaping workplace culture, and modulating the rhythms of immaterial labor, further dissolving the boundary between life and work.

1.3 Governing from Within

This governance of free time anticipates the biopolitical mechanisms discussed in this section, where the management of life becomes inseparable from the management of work. Leisure itself became a biopolitical instrument, designed to produce productive, disciplined, yet fulfilled subjects therefore, architecture regulated how people lived, rested, and reproduced their labor power.

Drawing on Foucault and Deleuze (1992), early offices can be seen as disciplinary institutions: spaces where bodies were trained to perform repetitive, standardized tasks, such as the "human computer" processing data for economic and administrative control. With the rise of immaterial labor, however, power shifted from external supervision to more diffuse, internalized mechanisms of control, where autonomy, feedback, and social organization became central to regulating behavior. The modern office and institutional architecture, through open layouts and visibility encouraged workers to internalize self-managed discipline while maintaining the appearance of freedom.

Bürolandschaft exemplifies this transformation. Unlike the rationalized open office, it emphasized flow, collaboration, and a more human-centered design. Features like opaque acoustic screens, thick carpeting, and strategically placed break rooms *(Pausenräume)* enable local intimacy and informal interaction, while still subtly guiding circulation and collaboration. These design strategies turned leisure spaces within the office into cybernetic and biopolitical tools: they encouraged social interaction, regulated break time, and shaped worker behavior according to organizational needs, reflecting a form of control that is internalized rather than externally imposed. Overall, the shift from disciplinary to modulatory control in office architecture mirrors broader social and economic transformations, including the rise of immaterial labor, the post-industrial welfare state, and the subtle governance of everyday life.

1.4 Cybernetic Control in the Office

Cybernetics, broadly understood as the study of self-regulating systems through feedback, transformed mid-twentieth century thinking about both organizations and architecture. It framed offices not as static containers but as dynamic systems in which information flows, human behavior, and spatial arrangements interact continuously. Gordon Pask (1969) described architecture itself as a cybernetic system, where buildings facilitate relationships, respond to users, and adapt through feedback loops. He further emphasized moving from simple control systems to second-order systems, where the observer is also a part of the system itself. Other theorists, including Norbert Wiener, and architects such as Cedric Price, Friedrich Kiesler, Nicholas Negroponte, and Christopher Alexander, applied these principles in design, creating spaces capable of self-organization, mutual adaptation, and continuous evolution (Spiller, 2007).

At the same time, computers and office automation transformed the nature of work, replacing repetitive human calculations with machines (D'Ignazio & Klein, 2020) and shifting control from bodies to information flows. The office became a site for managing immaterial labor, which produced intangible goods like knowledge, communication, and cultural content, rather than physical products.

Within this context, Bürolandschaft emerged as a spatial manifestation of cybernetic management: open, flexible, and modular layouts that organized desks, partitions, plants, and circulation to optimize communication and collaboration while embedding subtle behavioral guidance. These office landscapes

reflected welfare-state principles by translating rational planning, efficiency, and social equilibrium from public infrastructure into corporate spaces, supporting both productivity and employee well-being.

1.5 The Groundbreaking Spatial Experiment

After World War II, German architecture responded to shifting labor practices with a flexible open plan arrangement derived from cybernetic system principles. This new workspace called Bürolandschaft, offered a radical critique of the rigid, hierarchical office layouts of the early twentieth century. Aiming to liberate the worker and humanize the work environment in this leisure society, landscaped office plans featured visually loose and even chaotic arrangement of furniture separated by plants and dividers instead of any walls. The flexible furniture layout could be altered according to user needs, even adapting to disciplines and measures that are difficult to quantify and visualize, such as workflow and the social relationships associated with it.

The name "office landscape" was catchy, but it bared the risk of reflecting only the aesthetic features of a complex planning approach developed by The Quickborner Team (Lorenzen & Jaeger, 1968, p. 165). Because this seemingly unorganized space was, in fact, done very intentionally and was grounded in the principles of feedback, communication paths and roles within the company.

However revolutionary Bürolandschaft seemed, it was not the first time in the history that management consultants were concerned with mapping paper movement and optimizing office space according to communications. In 1918, Lee Galloway mapped the "inefficient journey of a policy," consolidating related departments within a single open plan space to reduce the processing time (Figure 4). Although, his chart was rooted in managerial efficiency rather than systems theory, his proposal nonetheless considered the office as a communication network.

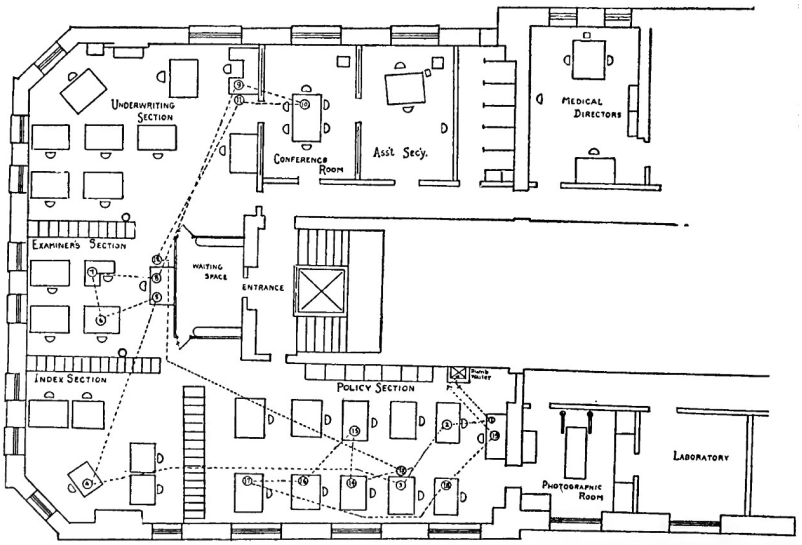


Figure 4. Departmental arrangement under Galloway's new organization (Galloway, 1919, p. 38)

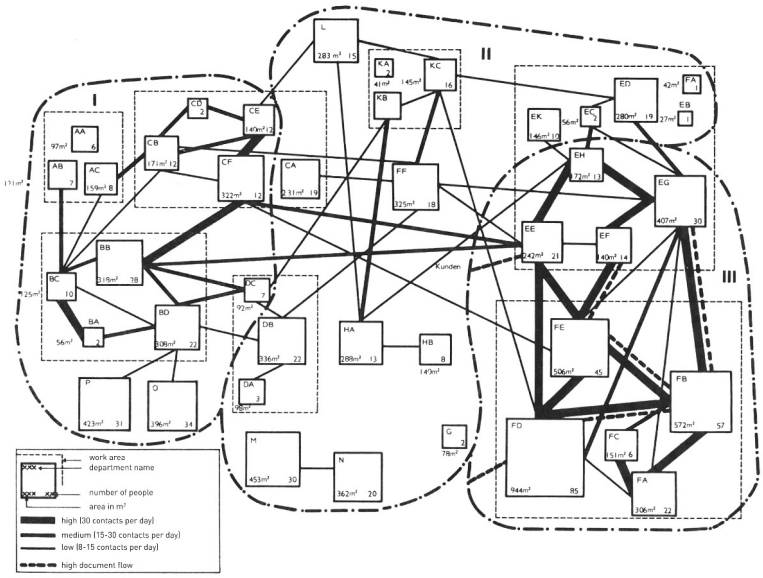


Figure 5. Relationship diagram of a head office with 800 people (Gottschalk, 1968, p. 45).

Four decades later, the data-driven methodology, *Organisationskybernetik* (cybernetics of organization) was developed by The Quickborner Team using communication matrices and organizational diagrams to regulate space based on the information flow. The company's information system was modeled according to quantified communication flows instead of the reporting lines (Gottschalk, 1968, p. 45; Lorenzen & Jaeger, 1968, p. 167). This distinction was crucial in finding out that frequent communications seldom follow the lines of command in an organization (Figure 5).

Far from being random, the office landscape was precisely designed in accordance with a catalog of requirements that continuously self-regulate and modulate the work. This data was then used to determine the "correct allocation" of departments and groups (Figure 6a), with the primary goal of physically placing teams that communicate frequently directly adjacent to each other on large, open floors, reducing physical barriers and speeding up information flow (Figure 6b). This approach contrasted sharply with earlier office types with corridor layouts and long office halls which were limited by fixed geometries and rigid circulation patterns. Bürolandschaft broke from these constraints by treating the floor as an open and flexible field where work groups and pathways could be arranged independent of the building's structural grid. This flexibility allowed spaces to be continuously reorganized in response to changing communication needs, reflecting the cybernetic emphasis on information flow in modern office work.

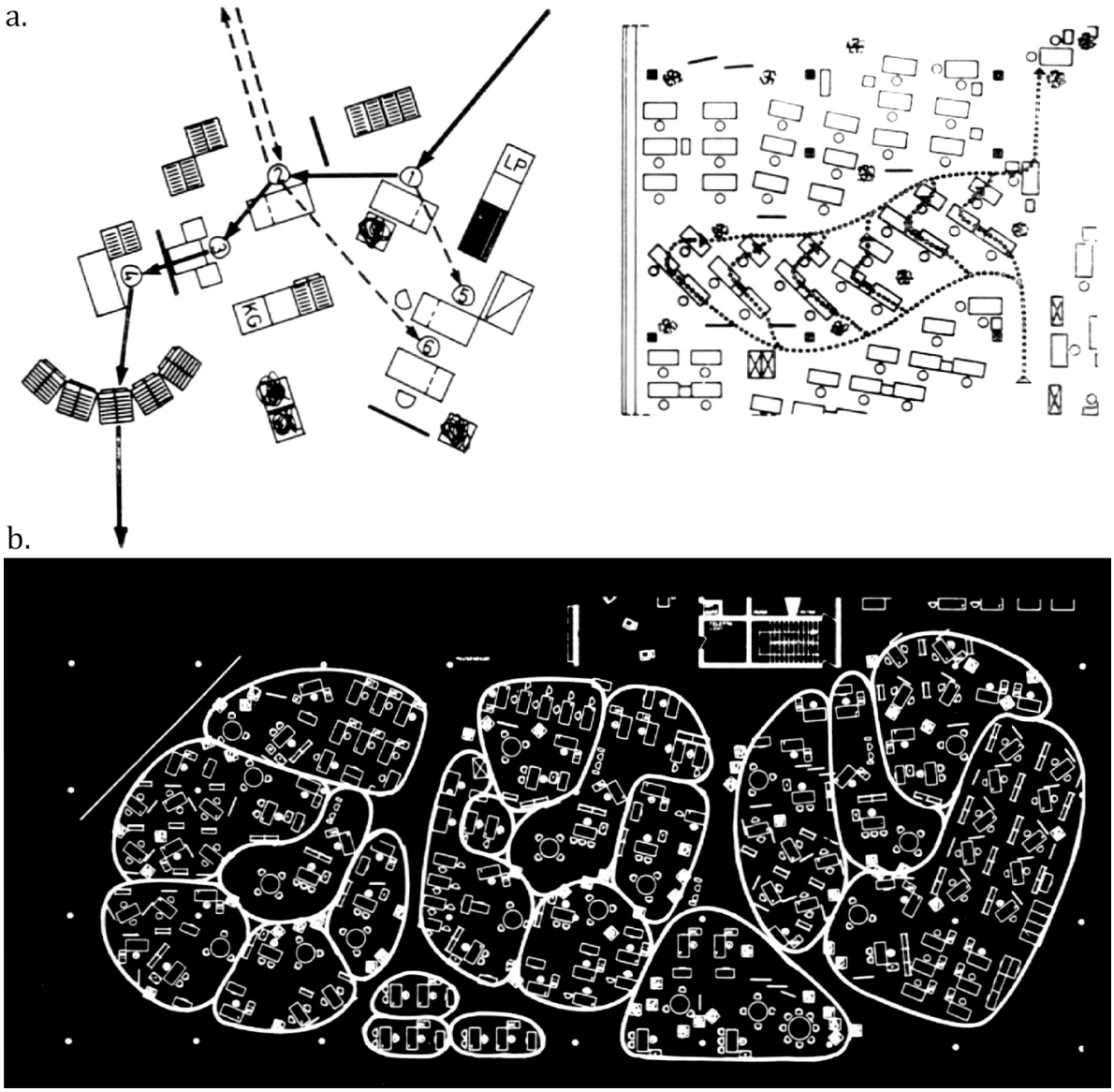


Figure 6. a: Paper flow in an order processing department. b: Working groups in an open plan arranged by communication and paper flow (Lorenzen and Jaeger, 1968, pp. 170-171).

2. SPATIAL READING

Yet this apparent liberation masked a subtler and more constantly present mechanism of control. By embedding regulation into communication flows, spatial flexibility, and continuous adjustment, Bürolandschaft signaled a shift from disciplinary society to a society of control. Consequently, this chapter interrogates the paradox of the flexible open office, revealing how its seemingly humane and dynamic spatial language operates as a sophisticated tool for modulating immaterial labor. With such formulation of space, both the role of the user and that of the objects were essential. To investigate this in practice, a collection of approximately 55 open-plan layouts was analyzed, a random selection of relevant plans are given in Table 1.

Year	Project	City	Country	Industry
1960	C. F. Boehringer & Soehne GmbH	Mannheim	Germany	Pharmaceutical
1962	C. Bertelsmann Verlagsgemeinschaft GmbH	Rheda, Westfalen	Germany	Publishing
1963	Nino GmbH & Co.	Nordhorn	Germany	Textiles
1963	Hoesch Export GmbH	Dortmund	Germany	Steel manufacturing
1966	Osram GmbH	Munich	Germany	Lighting
1967	DuPont de Nemours & Co.	Delaware	USA	Chemicals
1967	Corning Glass Works	New York	USA	Glass production
1968	Eastman Kodak	New York	USA	Photography
1968	Philips N.V.	Eindhoven	The Netherlands	Electronics
1968	Hansa Insurance Co.	Stockholm	Sweden	Insurance

Table 1. Some landscaped office examples

Although Bürolandschaft abandoned the rigid plan schemes of the early twentieth century, it did not eliminate spatial rules altogether. Instead, control shifted from strict enclosure to more subtle prescriptions about movement, visibility, and spatial rhythm. Circulation paths were intentionally shaped to guide how people moved through the office (Figure 7), ensuring that the seemingly informal layout still directed interaction and workflow.

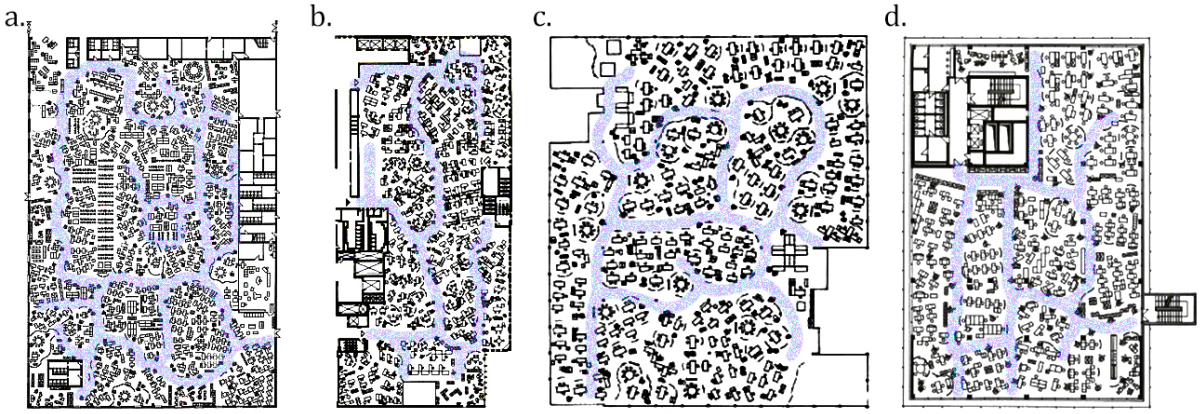


Figure 7. Circulation paths inside the workspace. a: GEG-Versand, Kamen, Germany, 1966. b: Eastman Kodak Company, Rochester, N.Y., USA, 1968. c: Philips N.V., Eindhoven, Holland, 1967. d: Continental Gummiwerke AG, Hannover, Germany, 1967

The placement of break rooms was also highly strategic. Located adjacent to the building core (Figure 8) and at the end of the main access route, these spaces occupy positions that remain shaped by the principles of control and visibility inherited from earlier open-office models. While they provide areas for informal interaction and rest, their location still channels movement through the office, subtly guiding circulation and maintaining surveillance. Although the new design intended workers to take breaks at will, leisure spaces were positioned along primary pathways, keeping autonomy within a controlled spatial framework. Social interaction and relaxation were permitted, but the location of break rooms and the circulation layout subtly guided movement and maintained visibility. Former managerial control was removed, but it gave way to peer-control. In this way, even moments of autonomy and downtime were structured.

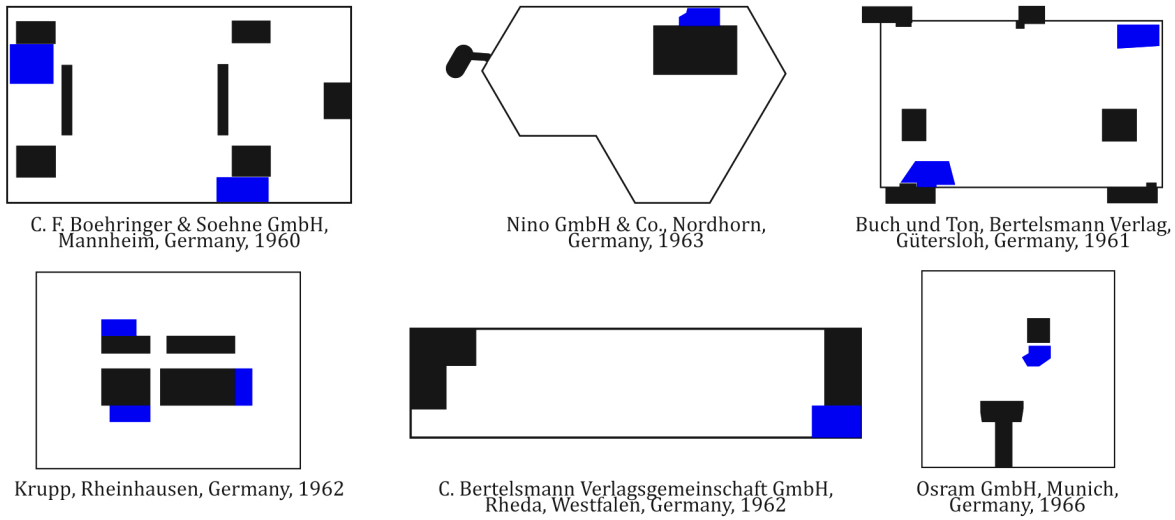


Figure 8. Break rooms (blue) are located right next to the building core (black)

Another guideline focused on column spacing. In earlier offices, the structural grid usually matched the size of rooms and the facade layout (Figure 9a). In Bürolandschaft, this link was intentionally broken so that furniture could be arranged more freely. Gottschalk (1968) explained that column spans smaller than 7.50 m made it difficult to place desks and partitions anywhere in the space, while spans between 7.50 m and 12.00 m gave the most flexibility, depending on whether the building used steel or reinforced concrete (Figure 9b). He also pointed out that columns strongly shape how a space feels. To avoid the grid creating a rigid, repetitive look, he recommended staggering the columns instead of placing them in strict rows. These guidelines reveal that flexibility in Bürolandschaft was not an absence of structure but a reconfiguration of it; by controlling circulation, column spacing, and visual openness, the system maintained organizational coherence while preserving the appearance of freedom. Importantly, these guidelines were consistently followed and implemented in the landscaped plans (Figure 9c).

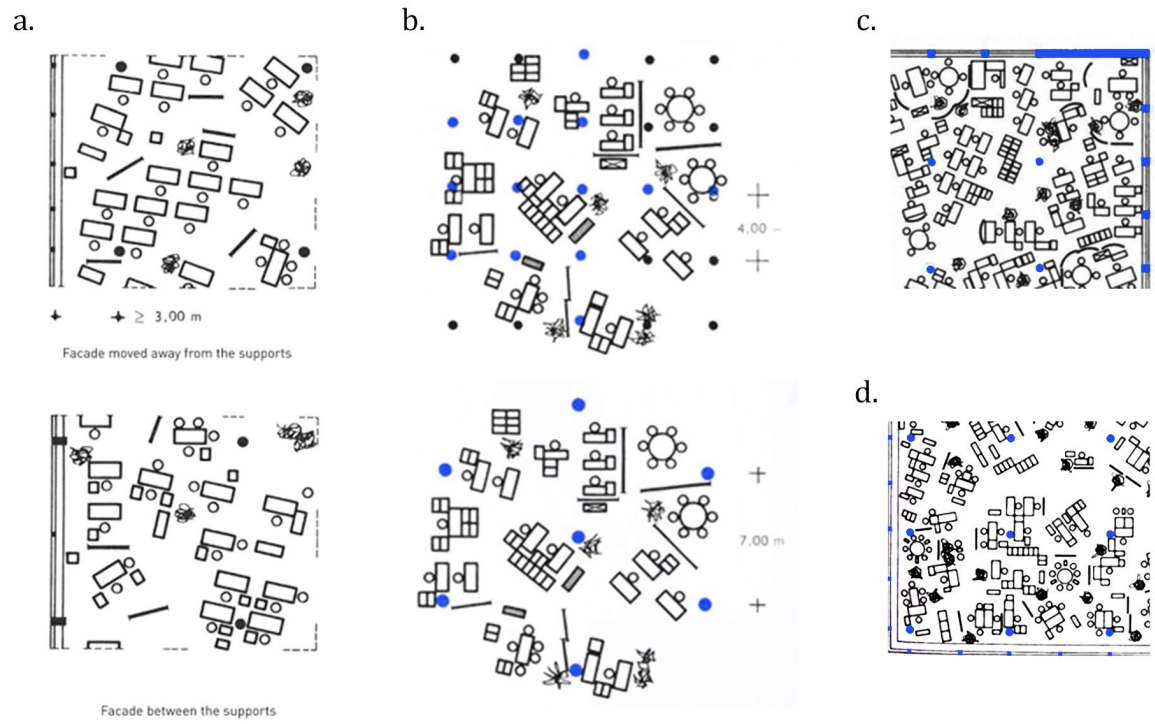
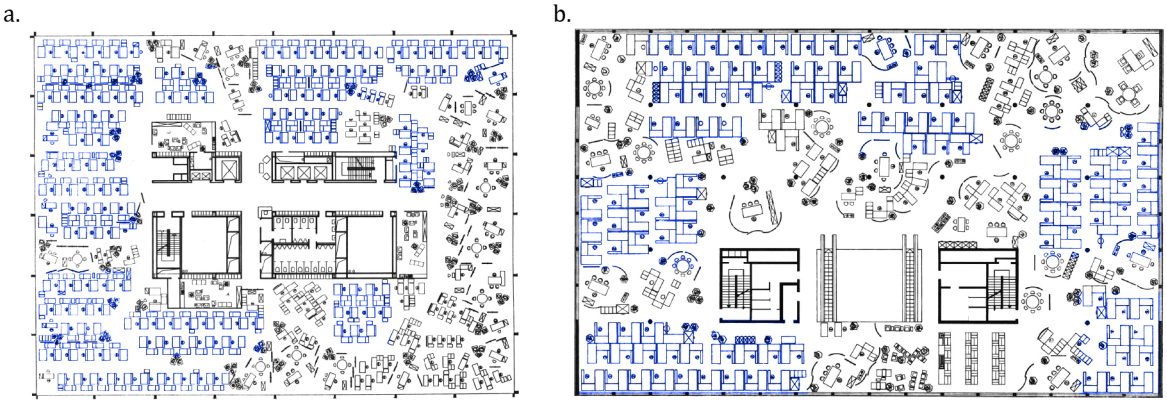


Figure 9. a: Position of the columns to the facade. b: Minimum column spacing (Gottschalk, 1968). c: Orenstein-Koppel, Dortmund, Germany, 1965. d: Osram GmbH, München, Germany, 1966.

While flexibility guided the overall design, specific work areas (especially those used by draftsmen) still remained relatively rational in plan (Figure 10). Workstations that required focused, process-driven tasks were arranged more systematically to reduce distractions and support workflows that depended on sequential or standardized processes. At the same time, these spaces retained the office landscape's characteristic adaptability, allowing furniture and circulation to be adjusted as needed.



Krupp, Rheinhausen, Germany, 1962
(mechanical and steel construction)

Orenstein-Koppel, Dortmund, Germany, 1965
(railway equipment)

Figure 10. Rational placement of draftsmen furniture.

This spatial reading exposed how the language of openness and flexibility hides an architecture of control. Walls were removed but replaced with protocols of circulation, visibility, and communication, to reconfigure discipline into modulation. Workers were not confined by partitions anymore but still governed

through self-management and continuous responsiveness. Therefore, what appeared as a humane landscape, operated as a spatial instrument for regulating autonomy itself.

3. MODULATED LIBERATION

This research drew a theoretical framework based on the chronological development of the flexible open plan office, arguing that the plan arrangement is an active agent in organizing power relations. Flexibility is read as both a modernist principle and a corporate strategy embedding control directly into spatial and organizational flows. Ideals of a liberated worker subject and a flexible work environment had been proven no less controlling than the systems The Quickborner Team claimed to replace.

Open-plan offices promised autonomy and collaboration but also imposed expectations of constant adaptability and self-regulation. Therefore, space is not neutral but an ideological device that organizes behavior according to managerial objectives. The core paradox of Bürolandschaft lies in this hidden mechanism of control. While abandoning the rigid disciplinary enclosures of the early twentieth century, it simultaneously introduced a more diffuse and flexible form of regulation.

In this sense, the office landscape represents a transitional architecture that marks the shift from the disciplinary enclosures analyzed by Michel Foucault to the diffuse and adaptive systems of regulation described by Gilles Deleuze. Control no longer relies on rigid partitions or hierarchical order but is embedded in communication and circulation. The architectural features of the Bürolandschaft are not only aesthetic choices but material expressions of this new paradigm. They embody a mode of power that is less visible, less rigid, but no less controlling, designed to modulate the conditions of immaterial labor across the entire workspace.

From the most rational modernist grids to the seemingly liberated landscapes of Bürolandschaft, office plan was never designed to act neutral. Every plan operates as an ideological device, translating abstract notions of order, efficiency, and control into material form. Architecture then participates in a typology of power with a role shifting from enclosure to modulation, from fixed hierarchy to adaptive governance. No matter how office layouts evolve through new managerial paradigms, their underlying function remains constant: to organize worker's behavior, to make labor visible, and to increase productivity disguised as flexibility or freedom.

This is evident even today with contemporary workplaces designed as playful, "home-like" environments, where break rooms, game areas, and cozy lounges are strategically placed to keep employees inside the building longer, subtly extending work hours while masking labor as leisure. What appears as openness and autonomy is often the architecture of compliance, shaping not only what we do but how we feel and where we spend our time.

4. KEY CONCEPTUAL REFLECTIONS ON ARCHITECTURAL DISCOURSE

The history of *Bürolandschaft* shows that architectural space is not just an empty container. It actively shapes how organizations work. The open-plan office, often described as a technical or ergonomic improvement, is better understood as a "*way of thinking about space,"* one that defines how work, communication, and authority are organized. Instead of using enclosed rooms for control, Bürolandschaft uses openness, movement, and furniture layouts to guide behavior.

This study argues that the flexible office is not simply a new version of the modernist grid. It represents a more fundamental shift: flexibility becomes a tool for regulating how people work. In this sense, Bürolandschaft sits between Foucault's ideas of discipline and Deleuze's concept of control. It reflects a move from fixed boundaries to constantly changeable spatial conditions. Its open and adjustable layout shows how architecture can influence behavior through flows and proximities rather than solid walls.

Seeing it this way makes the open-plan office an important topic for architectural theory. We need to look beyond functional explanations and ask how space shapes people and supports certain organizational ideas. In today's workplaces where digital technologies, emotional design strategies, and platform-based labor all interact, the lessons of Bürolandschaft remain highly relevant. They remind us that the office plan is not neutral; it is a cultural and political tool that influences how work is imagined and practiced.

In this perspective, the open-plan office becomes a lens for rethinking architecture's role in forming social relations. By examining its development, we see a broader pattern: architecture consistently helps produce organizational power by turning manage the ideas into spatial form. Therefore, a critical theory of architecture and work must consider not only what space allows, but also what it quietly controls.

ACKNOWLEDGEMENTS

This research is based on Elif Ece Ilgaz's ongoing Master thesis, supervised by Prof. Dr. Nurbin Paker Kahvecioğlu at the Architectural Design Master Program of Istanbul Technical University. First author thanks Istanbul Kültür University for funding participation in this conference under its Support Program for National and International Events (ULEP).

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ARCHITECTURE AS TACTILE TEXT: DESIGNING SPATIAL LITERACY FOR THE BLIND

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ABSTRACT

Architecture is predominantly treated as a visual art, yet its experience is fundamentally multisensory, encompassing tactile, kinaesthetic, and embodied sensations. This study repositions architecture as a "tactile text"—a spatial language read and understood through the body, particularly focusing on individuals who are visually impaired and blind (VIB). Grounded in phenomenological theories of perception (Merleau-Ponty, 1962; Pallasmaa, 1996) and concepts of hapticity and embodied cognition, this research explores how architectural knowledge and spatial literacy can be communicated via multisensory design. The core of the study is a design-based research project translating fundamental architectural concepts into a tangible, experiential tactile book. The methodology combines design-based research and research-based design, focusing on translating bodily interactions with space into tactile representations, thereby positioning touch as a mode of cognition and imagination. Conducted during the 2024–2025 academic year, the research involved experimental workshops at Tekirdağ Namık Kemal University. Architecture and design students collaborated with VIB participants (Six Dots Association for the Blind in Tekirdağ and Süleymanpaşa District Directorate of National Education) in verbal and tactile communication exercises to explore the expression and interpretation of spatial and architectural ideas through touch. Findings underscore the pivotal role of communication and multisensory engagement in conveying architectural concepts. The collaboration demonstrated that tactile representation functions as both an inclusive pedagogical tool and an epistemic expansion of spatial understanding. This research advocates for an inclusive architectural literacy that values sensory diversity, fosters empathetic dialogue between designers and users, and challenges the ocular-centric bias in architectural education. By foregrounding the haptic dimension of design, it redefines the relationship between architecture, accessibility, and embodied knowledge.

KEYWORDS: VIB (visually impaired and blind), architectural representation, tactile representation.

1. INTRODUCTION

Architecture is often seen as primarily visual; however, its full experience extends beyond the optical to encompass tactile, kinaesthetic, and embodied sensations. While traditionally grounded in aesthetics of form and proportion, architecture's true depth lies in its material, bodily, and sensory dimensions (Pallasmaa, 1996). This study reconceptualizes architecture as a tactile text—a sensory field that can be read, felt, and understood through the body. Drawing on phenomenological and embodied theories of perception (Merleau-Ponty, 1962; Pallasmaa, 1996), it investigates how architectural knowledge and spatial literacy can be communicated through multisensory design methods for visually impaired and blind (VIB) individuals.

The study is part of a research project developing a tactile architectural book that translates spatial concepts into tangible, experiential forms. The research combines research-driven (Zeisel, 2006) and design-led (Groat and Wang, 2002) approaches, integral to experimental architectural pedagogy and co-design practices. The research follows a contextual inquiry framework (Whiteside, Bennett, and Holtzblatt, 1988; Leinonen, 2010) to understand the physical, social, and cultural contexts of design. Using a hermeneutic approach, the research team observed and participated in the daily practices of both architecture students and VIB participants, collecting data through verbal interactions, sketches, drawings, and notes while accounting for diverse educational, professional, sociocultural, and physical experiences. Research-driven design enables designers to acquire knowledge, generate innovative solutions, and integrate intuition, imagination, and creativity into human-centered design (Zeisel, 2006). Research-driven design addresses problems with multiple valid solutions, combining analytical problem-solving with iterative and cyclical exploration of design ideas (Zeisel, 2006; Simon, 1996; Cordan, 2017). Design-led research emphasizes understanding through direct intervention, recognizing that the researcher's presence shapes outcomes. Grounded in ethnographic principles (Garfinkel, 1967), this activity-based approach engages participants in tasks that foster reflection, problem-solving, and creative responses (Groat and Wang, 2002).

During the 2024–2025 academic year, a series of experimental workshops was conducted at the Faculty of Fine Arts, Design and Architecture, Tekirdağ Namık Kemal University. Architecture students and VIB participants were invited from the Six Dots Association for the Blind in Tekirdağ and Süleymanpaşa District Directorate of National Education) collaboratively explored how spatial concepts such as rhythm, proportion, and materiality could be translated into tactile and auditory forms. This co-learning process emphasized communication, empathy, and inclusive pedagogical practice, demonstrating that multisensory engagement enriches spatial understanding for both sighted and visually impaired participants. Finally, the study draws on Paul-Louis Colon's interpretation of Erwin Straus, situating ‘‘feeling” as an immediate, embodied relation to the world and ‘‘perception” as a reflexive positioning of the subject (2018). This theoretical lens guided attention to the affective, bodily, and relational dimensions of architectural experience, foregrounding tactile engagement as a meaningful mode of knowledge production.

The creation of an architectural book for VIB individuals represents a critical step toward expanding spatial literacy and advancing inclusive design practices. This research presents the significance of multimodal interaction in architectural education and representation, contesting the conventional visual-centric paradigm. By foregrounding sensory diversity, the project fosters meaningful dialogue between designers and users and reinterprets the relationship between architecture, accessibility, and embodied knowledge. This discourse challenges the visual-centric bias in architectural education and broadens the epistemic understanding of spatial experience.

2. PROBLEM STATEMENT

Architectural education remains largely visual, often neglecting other sensory modalities essential to spatial experience. Overreliance on visual representation, from drawings to digital models, risks alienating both designers and users from the lived, embodied realities of space. This study identifies a gap in current

pedagogy: the lack of tactile and multisensory engagement in design learning. This research asks: How can architecture be taught and communicated through senses other than sight? How can tactile representation expand architectural literacy to include individuals who are blind or visually impaired?

In this regard, several experiments were conducted employing Gaston Bachelard's topoanalysis approach to make differences in spatial experience a common communication ground for visually impaired and sighted people. In his book The Poetics of Space (1994), Gaston Bachelard introduces the concept of "topoanalysis. Topoanalysis draws on descriptive psychology, depth psychology, psychoanalysis, and phenomenology to explore the house as a key site of inner life. It is "the systematic psychological study of the sites of our intimate lives" (Bachelard, 1994, p. 8). For Bachelard, the memory of a house and its rooms is not something retrieved from the past but something that continually permeates the present—an active layer of lived experience rather than a distant recollection. His reflections often return to the human longing to arrest time and escape temporal flow. Drawing on the concept of topoanalysis (1994), this study approaches space as a primary medium through which memory and experience are activated, rather than as a chronological record. Topoanalysis prioritizes lived intensity and spatial fragments—such as rooms, corners, and thresholds—as methodological units for examining how experience is recalled and constructed. In this research, these spatial fragments inform the design and evaluation of tactile representations, treating space not as a measurable container but as an affective and experiential structure.

3. METHODOLOGY

This study was conducted during the 2024-2025 academic year at the Faculty of Fine Arts, Design and Architecture, Tekirdağ Namık Kemal University. A design-based research approach was used, combining experimental workshops, tactile exercises, and collaborative learning between architecture students and VIB participants. While exploring ways to enhance communication between architecture students and visually impaired people on spatial experiences in built environments, categories of space emerged with codes of accessibility, safety, affect, and also with codes of memory, habits, and their material convergence. It is conceivable that there is a significant disparity between architecture students and visually impaired individuals. Each workshop focused on translating spatial concepts such as rhythm, proportion, and materiality into tactile representations using accessible materials and verbal communication. The participants were encouraged to co-create and interpret architectural forms through touch. Architecture students were tasked with developing tactile models and textures that expressed spatial ideas, while VIB participants provided feedback based on their sensory perception. This reciprocal process fostered a dialogical and empathetic mode of learning that emphasized communication, collaboration, and sensory diversity.

The study involved a total of 17 participants, including 7 undergraduate architecture students and 10 visually impaired and blind (VIB) individuals, 7 of whom were congenitally blind. All participants were above 18 years of age. The research process consisted of several stages: an initial preparatory workshop with architecture students, two main co-learning workshops in which students and VIB participants worked together, and a series of in-depth interviews conducted individually with VIB participants. During the workshops, participants engaged in a set of tactile design tasks, including creating embossed forms on clay, interpreting given spatial concepts, and collaboratively constructing tactile representations of architectural ideas. The in-depth interviews with VIB participants were audio-recorded and fully transcribed. To strengthen the reliability of the analysis, two researchers independently coded a subset of transcripts and discussed discrepancies through consensus-based comparison, ensuring inter-rater agreement on the interpretation of themes. This process enabled the identification of recurring sensory priorities, communicative patterns, and contrasts in spatial reasoning. The researchers explored and paired spatial concepts such as order–chaos, void–density, tension–spaciousness, formality–informality, rhythm–stasis/ireegularity, continuity–discontinuity, hierarchy–balance, and transformation. These conceptual contrasts also guided tactile experimentation during the workshops. Data were collected through audio

recordings, field notes, sketches, and tactile outputs produced by both groups. All qualitative data were systematically coded and analyzed using MAXQDA, enabling the identification of recurring themes, sensory priorities, and differences in spatial interpretation between students and VIB participants.

Central to the project is the conceptual exchange between architecture students and blind individuals, which becomes a site of reciprocal learning. Through collaborative workshops and sensory-based explorations, architecture students communicate spatial design principles, such as proportion, rhythm, structure, and materiality, while gaining new insights into how space is perceived and experienced without vision.

The educational value of the project lies in its capacity to expand spatial literacy beyond visual perception by fostering empathetic communication between designers and users, challenging the ocular-centric bias in architectural education, and incorporating diverse sensory experiences into design thinking. This further contributes to the development of alternative modes of architectural representation, promotes inclusive design practices that address the needs of all users, and ultimately can redefine the relationship between architecture, accessibility, and embodied knowledge. This approach to architectural education has the potential to alter design practices, making them more accessible and responsive to diverse user needs. By incorporating tactile and multisensory elements, the project cultivates a more inclusive form of spatial literacy that values sensory diversity and expands the conceptual and experiential dimensions of architectural thinking (Figures 1).

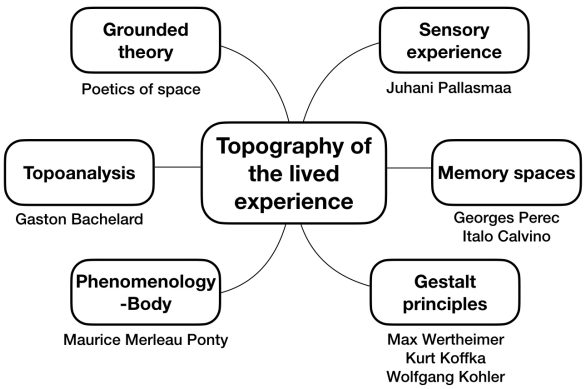

Figure 1. Concept map of the research

This figure visualizes the core theoretical and methodological components of the study, illustrating how phenomenology, tactile literacy, and co-learning frameworks intersect. It provides a structural overview of the research logic and conceptual relationships. Figure 2 outlines the multi-layered research process, including workshops, tactile experiments, and collaborative learning stages between architecture students and VIB participants. It highlights the cyclical and iterative nature of the design-based research approach.

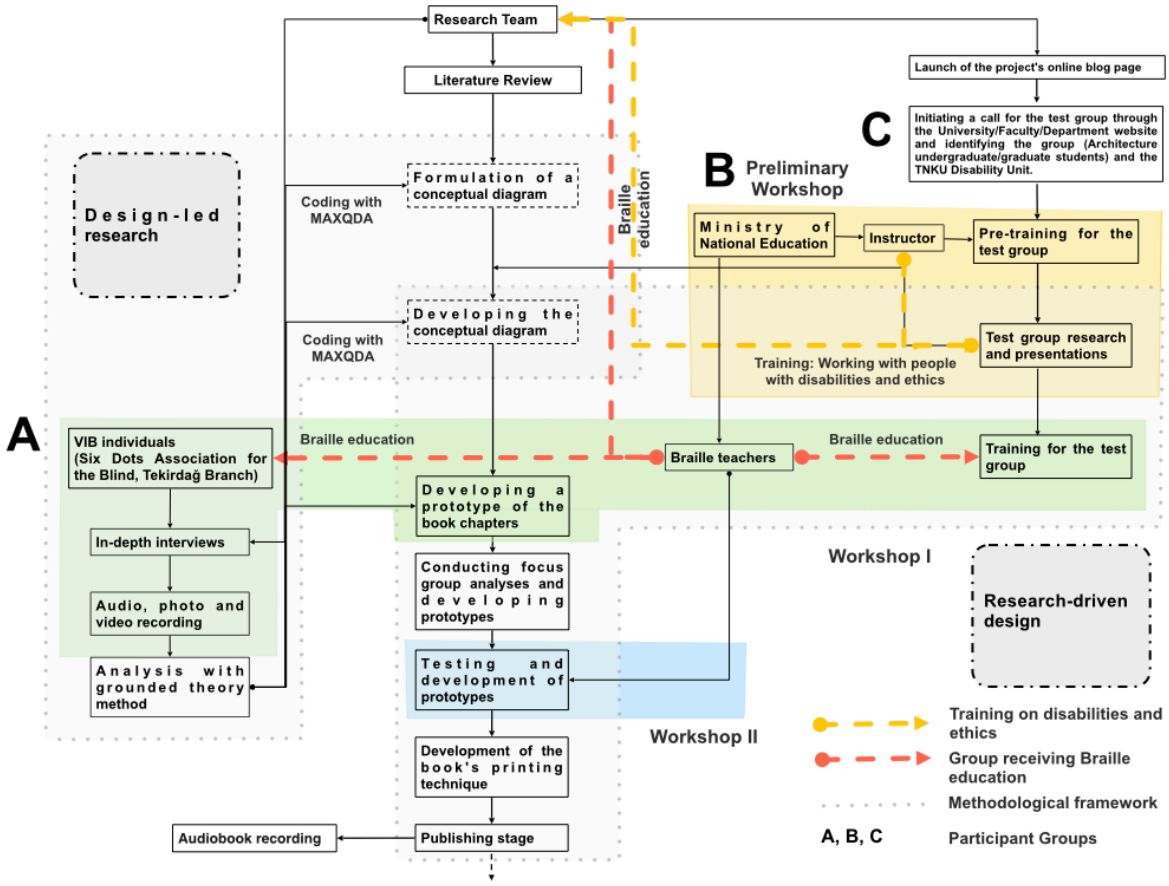

Figure 2. Methodology and process of the research

This study has several limitations that should be considered. First, the diversity and composition of the participant groups may limit the transferability of the findings to broader contexts. Although the study included both architecture students and visually impaired and low-vision (VIB) individuals, the sample was shaped by specific demographic, educational, cultural, and socioeconomic characteristics. Second, the study is constrained by the inherent subjectivity of sensory experience. Tactile and multisensory interactions rely heavily on individual perception, interpretation, and prior experience, which can lead to significant differences between participants. This variability makes it difficult to establish consistent evaluation criteria or develop standardized tactile representations that can be applied to broad user groups. Thirdly, the limited longitudinal assessment in the research design constitutes a significant constraint. As this study focused primarily on workshop-based interactions and instant participant feedback, it was not possible to evaluate the lasting effects of tactile literacy on architectural understanding, design practice, or long-term learning processes. Finally, resource and material limitations may have affected the representational capacity of the tactile models used. Although the tactile materials used in the workshops supported multisensory interaction, they may not have fully captured the formal, spatial, and functional characteristics of architectural environments.

4. CO-LEARNING TACTILE EXPERIMENTS

4.1. Methodological and Conceptual Framework of the Book

The experimental, multisensory, and inclusive architectural book redefines how architecture can be perceived, represented, and communicated beyond the domain of sight. The project arises from the conviction that architectural knowledge is not purely visual but fundamentally embodied, tactile, and relational. The book functions simultaneously as a spatial artifact and a pedagogical tool—an interactive

landscape in which reading, touching, and listening merge into an experience of architectural thinking. Rooted in phenomenological approaches (Merleau-Ponty, 1962; Pallasmaa, 1996), the book situates perception as an active engagement between body and environment. Architecture is not conceived as an object of distant observation but as a medium of encounter and relationship. The body becomes both subject and instrument of knowledge, capable of reading space through tactile and kinesthetic cues. Each fragment of the book corresponds to a mode of sensory engagement—touch, sound, movement, or spatial memory—allowing readers to construct meaning through embodied cognition rather than visual analysis. In this sense, the book resists linear narration. Instead, it unfolds as a constellation of tactile fragments and interlinked paths that mirror the layered and discontinuous nature of spatial experience. Readers, whether sighted or blind, navigate the books through touch, sound, and intuition, constructing their own trajectories of meaning.

The structural composition of the book draws inspiration from Georges Perec's literary experiments, particularly his Life: A User's Manual (La Vie mode d'emploi, 1978). Perec's approach to fragmentary narration—his mosaic of rooms, micro-events, and spatial details—resonates strongly with the architectural logic of this project. Like Perec's building, composed of interrelated stories, this book treats each page as a room in a larger architectural narrative. Each fragment exists autonomously but contributes to a collective spatial memory. The reader, like Perec's flâneur, assembles meaning by moving between microcosms. The discontinuous and open-ended structure invites multiple readings, mirroring the way people inhabit and interpret architectural space in different ways. This fragmentary method also connects to the narratives of Italo Calvino's Invisible Cities (1974)—works that use space, texture, and time as narrative devices. The book's form thus echoes literary modernism while translating its logic into tactile and spatial experience. The outcome is an architectural narrative that can be traversed, in which the literary structure and spatial arrangement converge.

The Faculty of Fine Arts, Design, and Architecture building was visualized through a semi-poetic and speculative language linked to its levels of physical accessibility, drawing on Gaston Bachelard's (1994) topo-analytic approach. During the visualization process, photographs and hand sketches obtained from the building's interior spaces were used as primary interfaces; these visuals were processed in Adobe Illustrator and further evaluated in conjunction with the AutoCAD program. The interior spaces were additionally overlaid using three-dimensional modeling software, such as Google SketchUp, and represented through composite images generated from plans, sections, elevations, and various camera angles. All drawings were converted into vector format, simplified, and reorganized to enhance the spatial experience of visually impaired users in accordance with an accessibility-centered design approach. The drawings and representations, together with the developed legend system, were distributed across the different pages of the prototype book. The book also integrates semi-encyclopedic definitions and semi-poetic descriptions through a series of explanatory boxes, creating a narrative interface in which the subjective and objective modes of knowledge production intersect. Braille printing was partially implemented at the prototype level, with full-scale production envisioned for future iterations.

To systematically articulate the components of space and the fundamental principles of design, Gestalt principles were employed alongside Francis D. K. Ching and Eckler's book Introduction to Architecture (2013) and Ching's Architecture: Form, Space, and Order (2023) and Fransizka Ullmann's Basics: Architecture and Dynamics Book (2011) were used as primary reference sources. In the final stage, the selected vectorized draft drawings were adapted for Braille-compatible printing as part of preliminary prototyping process.

4.1.1. Design Methodology and Material Strategies

The book draft was developed through design-based research combining tactile prototyping and collaborative feedback. Each tactile element—whether a raised surface, embossed symbol, or Braille caption—was refined through iterative workshops with architecture students and visually impaired

participants. This participatory process showed that tactile language remained functional, legible, and poetic rather than decorative.

The tactile design strategies that aim to structure the reading experience are as follows:

- Layered Paper Surfaces – Removable or foldable paper layers symbolize architectural thresholds such as doors, steps, and curtains, flaps
- Tactile Mapping – Raised line maps guide the finger's movement, transforming the act of reading into a form of navigation.
- Material Transitions – Varied textures (rough, smooth, soft, reflective) simulate different architectural materials, creating a tactile dialogue between matter and meaning
- Audio Integration – Certain pages are connected to soundscapes via QR codes, thereby expanding the temporal and auditory dimensions of reading. All textual sections of the book were also narrated using both AI-generated and analog voice recordings.

These techniques translate architectural phenomena—light, sound, materiality, and memory—into sensory form. The tactile vocabulary is complemented by minimal Braille and embossed typographies, as well as directional symbols (arrows, circles, triangles) that orient without dictating movement. This balance between guidance and interpretive freedom is essential: it transforms the reader into a spatial participant rather than a passive observer.

At the time of the study, the book existed as a series of experimental prototypes rather than a fully printed publication. Braille elements were partially implemented at the prototype level to test legibility, orientation, and integration with tactile surfaces. These Braille components functioned as navigational and conceptual anchors within selected sections, while full-scale Braille printing is reserved for a subsequent production phase. This staged implementation allowed the research to evaluate tactile reading strategies and multisensory interaction without presupposing a finalized artifact.

4.1.2. Content and Experiential Logic

The book's six routes each explore a different dimension of spatial experience. They have no defined beginnings or ends. Instead, they spiral, intersect, and reflect one another. One chapter features tactile compositions evoking thresholds, staircases, and narrow passages. These pages, inscribed with reliefs and brief narrative fragments, explore how proximity, pressure, and movement influence spatial perception. Another chapter features wave-like embossings, echo patterns, and silent voids, inviting readers to hear the architecture through their fingertips. Reverse Grounds challenges readers' sense of orientation with mirrored layouts and disorienting reliefs that require physical rotation. This prompts users to reimagine gravity and balance. The Garden and Open Space extends this sensory mapping outward with foldable topographies and organic textures that suggest air, soil, and vegetation. The Space of Light and Time incorporates translucent paper and layered shadows to evoke reflection, aging, and memory. Finally, Loss and Exit offers a nearly blank, smooth page—an intentional void that symbolizes the dissolution of boundaries and the act of finding one's own direction (Figures 3, 4, 5).

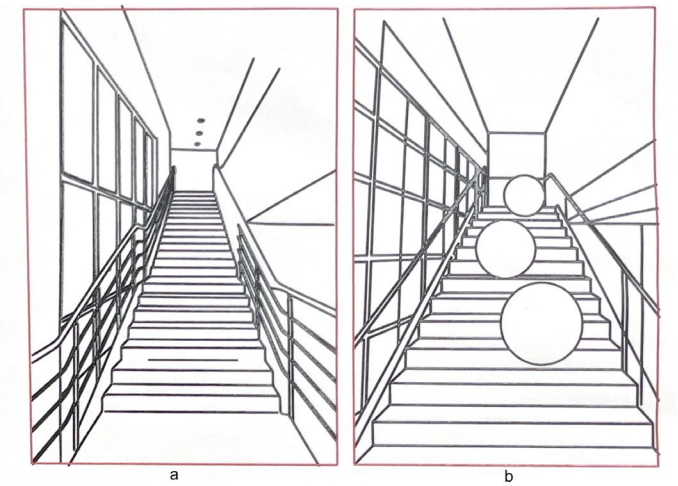

Figure 3. Tactile compositions: (a) staircase-focused study, (b) abstract interpretation of upward movement.

Figure 3 presents tactile explorations that interpret vertical movement, thresholds, and bodily orientation through raised surfaces and embossed patterns. The compositions exemplify how spatial concepts such as ascent and transition can be translated into tactile form. Figure 4 images compare two versions of the same tactile composition—one produced with black embossing, the other with white relief. The contrast demonstrates how material and surface treatment affect tactile legibility and sensory perception. Figure 5 shows detailed raised-line drawings designed for tactile reading. The compositions illustrate how architectural information can be communicated through simplified, high-contrast tactile graphics optimized for finger navigation.

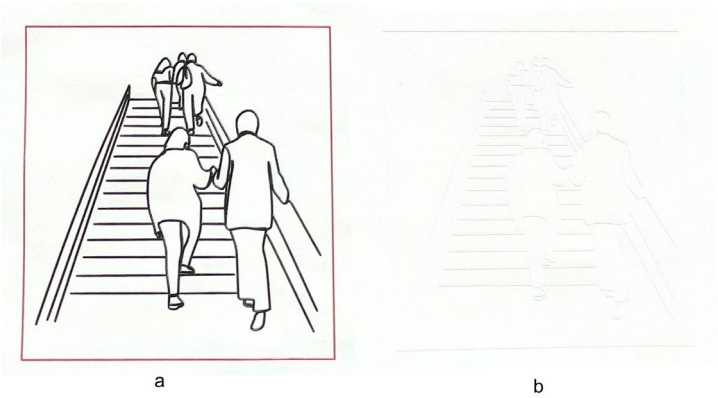

Figure 4. Tactile compositions are presented in two versions: (a) black embossing, (b) white embossing.

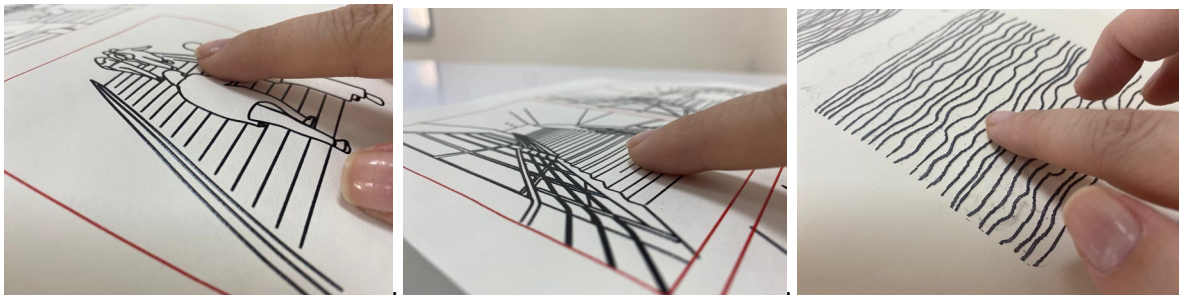

Figure 5. Black embossed and raised lines

4.1.3. Lexical and Architectural References

Alongside these narrative and sensory layers, the book integrates concise architectural definitions and terms derived from Doğan Hasol's Ansiklopedik Mimarlık Sözlüğü (Encyclopedic Dictionary of Architecture, 1998). These entries—such as threshold, section, plan, and mezzanine—appear as tactile or Braille micro-notes, forming an architectural glossary embedded in the sensory text. Each term is both linguistic and spatial, linking the physical act of touching to the conceptual act of defining. For instance, the tactile depiction of a "section" transforms the abstract notion of a vertical cut into an embodied experience of tracing depth with one's hand. In this way, Hasol's analytical clarity and Perec's narrative fragmentation converge to produce a unique synthesis of technical and poetic architecture.

4.1.4. Collaborative and Inclusive Pedagogy

The creation process was based on co-learning and empathy. Architecture students collaborated with VIB participants through workshops that combined tactile exercises, spatial dialogue, and embodied storytelling. These encounters blur the traditional hierarchy between designers and users. The participants co-authored spatial fragments, influencing the final design of the tactile routes and narrative flow. This approach promotes a model of inclusive pedagogy that emphasizes learning with rather than for the blind. This demonstrates that tactile representation is not a simplified substitute for visual drawing but a parallel mode of architectural thought—one that enhances sensitivity, attentiveness, and ethical awareness in design education.

4.1.5. Reading as Spatial and Temporal Performance

Reading this book is a performative act—an interplay between body, time, and memory. Each touch is part of a choreography of pauses, pressures, and orientations. As the fingers move across pages, they reconstruct space through rhythm and duration. The QR-linked soundscapes—recorded footsteps, wind, and echoes—extend the page into a temporal experience, creating a dialogue between the material and digital space. Therefore, the book becomes a hybrid architecture: part physical object, part auditory environment, and part mnemonic map. It transforms reading into inhabiting.

4.1.6. Toward a New Spatial Literacy

Ultimately, this book advocates for an expanded understanding of spatial literacy—one that transcends the visual and embraces the multisensory, inclusive, and poetic dimensions of space. By merging phenomenology, literary fragmentation, and tactile design, it proposes an architecture that can be read and felt.

Inspired by Perec's narrative architecture, Hasol's precise lexicon, and Pallasmaa's phenomenological humanism, this work challenges the ocular bias of architectural culture and suggests that genuine understanding arises from bodily dialogue with space. The book thus stands as both artifact and methodology: a pedagogical tool, an experimental text, and a living proof that architecture—like language—can be learned through touch, sound, and imagination.

5. FINDINGS AND DISCUSSION

The findings of this ongoing research revealed that tactile interaction can deepen spatial understanding for both sighted and visually impaired participants. For architecture students, engaging with VIB participants led to a re-evaluation of how space is represented and perceived. This process encourages the recognition of non-visual sensory data, such as texture, temperature, density, and acoustics, as integral components of design thinking. For VIB participants, the workshops provided a platform to articulate spatial imagination and experience through touch and movement, reinforcing that spatial literacy is not dependent on sight but

on embodied perception. Communication emerged as a central theme. Verbal descriptions paired with tactile feedback created shared frameworks of understanding between designers and users. This co-learning process blurred traditional hierarchies in education, highlighting that inclusive pedagogy must move "from designing for the blind" to "designing with the blind."

The findings of this study closely resonate with the phenomenological and multisensory frameworks established in the literature. As Merleau-Ponty (1962) and Pallasmaa (1996) argue, spatial understanding emerges through the body's active engagement with the world, and the workshops confirmed this by demonstrating that both sighted and visually impaired participants constructed architectural meaning through tactile, kinesthetic, and auditory cues. The collaborative exchanges further support Bachelard's (1994) notion that space is inhabited through memory, imagination, and intimate sensory experience, as participants articulated spatial impressions not through visual form but through lived, embodied sensations. Moreover, the co-learning dynamics align with research-based design theories described by Zeisel (2006) and Groat and Wang (2002), showing that design knowledge deepens when users and designers engage in shared inquiry and material exploration. By revealing how tactile interaction expands architectural cognition and communicative clarity, the study reinforces existing scholarship while extending it toward more inclusive and embodied models of spatial literacy.

Within the scope of the experimental workshops, this approach demonstrated the capacity to inform and support alternative design practices by encouraging greater sensitivity to non-visual forms of spatial knowledge. Rather than redefining architectural practice at large, the findings suggest that tactile and multisensory methods can contribute to rethinking the relationship between architecture, accessibility, and embodied knowledge within educational and participatory design contexts. These results should therefore be understood as situated insights emerging from a specific pedagogical framework, offering transferable principles rather than universal conclusions.

6. TOWARDS AN INCLUSIVE PEDAGOGY IN ARCHITECTURE AND DESIGN STUDIES

This research underscores the transformative potential of multisensory learning environments in architectural education. By integrating tactile methods, design schools can cultivate more inclusive pedagogies that value bodily and affective knowledge alongside visual analysis. The workshops demonstrated that architecture can serve as a medium of dialogue between sighted and non-sighted participants, between the sensory and the cognitive, and between perception and imagination.

Learning with the blind challenges dominant narratives in design education, fostering empathy, awareness, and critical reflection on sensory biases. It expands architectural literacy beyond sight, promoting accessibility not as a technical add-on but as a creative and epistemic opportunity.

6.1. Objectives of the Inclusive Co-Learning Framework

The workshops were also structured around a broader social and pedagogical mission that extended beyond the immediate outcomes of tactile experimentation. The core aim of this initiative is to create environments where individuals with special needs and design students can encounter each other within an interactive, dialogical framework. By facilitating direct collaboration, the project seeks to enable mutual learning, shared authorship, and reciprocal exchange. Such encounters foster an understanding that diversity in sensory perception is not a limitation but a generative ground for innovation in architectural thinking.

One of the key objectives is to cultivate a common platform for co-design practices, allowing diverse communities to engage in critical discussions about the built environment. These interactions create intersections where inclusive dialogues can emerge, contributing to a broader cultural shift toward social equity and spatial justice. Through co-design sessions, visually impaired participants and design students

collectively questioned dominant assumptions about space, accessibility, and representation, thereby expanding the conceptual horizon of inclusive architecture.

For design students, workshops provide early exposure to inclusive design principles grounded in real, embodied interactions rather than abstract guidelines. This direct engagement enables future architects to internalize inclusive design as an ethical and creative responsibility, integrating accessibility into their professional identities and design processes. These activities encourage students to reconsider their habitual reliance on visual media and explore tactile, auditory, and kinesthetic forms of spatial reasoning. For young visually impaired participants, the project offers early architectural experiences that may inspire interest in design education and creative professions. By engaging with spatial concepts through touch, movement, and storytelling, VIB participants gain confidence in navigating and interpreting architectural ideas, potentially motivating them to pursue pathways in design, architecture, or related fields.

The initiative also seeks to expand the cultural visibility of disability within architecture and the arts by producing tangible outcomes, such as collaborative tactile spatial drafts, that can be exhibited in public cultural venues in Tekirdağ and Istanbul. These exhibitions aim to raise national awareness about inclusive design and promote accessible architectural practices across disciplines.

Finally, the co-learning framework reinforces the value of situated, collaborative production. Through collective making, participants engage in a shared process of thinking-through-doing, where ideas are materialized, questioned, and re-imagined. This methodology not only strengthens social bonds but also enriches architectural pedagogy by foregrounding empathy, sensory diversity, and participatory knowledge production.

7. CONCLUSION

This study reframes architecture as a multisensory and embodied form of knowledge, demonstrating that spatial understanding does not rely solely on vision but emerges through touch, movement, sound, and interpersonal communication. Through collaborative workshops between architecture students and visually impaired and blind (VIB) participants, the research showed that tactile representation is not a compensatory tool but a parallel mode of architectural thinking—one that enriches design education by opening alternative pathways of perception and cognition. The workshops revealed that both groups benefit from shared sensory exploration: students reconsidered the dominance of visual representation, while VIB participants articulated spatial imagination through tactile and kinesthetic cues. The project further demonstrated that inclusive co-learning environments foster empathy, dialogue, and critical reflection, challenging entrenched ocular-centric biases in architectural pedagogy. By engaging participants in joint making, interpretation, and discussion, the study introduced a model of architectural literacy grounded in embodied interaction and sensory diversity. This approach also informed the development of the experimental tactile book, where fragmentary narratives, layered materials, audio features, and tactile mappings work together to translate architectural concepts into accessible and experiential formats. Taken together, the findings underscore the need for design education to embrace multisensory methodologies as integral—not supplemental—components of architectural training. Future research may extend this work by developing advanced tactile interfaces, sound-based spatial mapping systems, and long-term curricular models and full-scale printing and complete Braille integration based on insights gained from the prototype workshops that integrate inclusive design from early stages of architectural learning. By positioning touch as a cognitive and imaginative act, this study contributes to an emerging discourse in which architecture becomes a space of shared authorship, sensory justice, and expanded modes of knowing.

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RECLAIMING THE UTOPIAN IDEALS WITHIN SOCIAL SUSTAINABILITY

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ABSTRACT

Constructing the future through a longing for the past and envisioned ideals has been a persistent tradition throughout human history, as individuals strive to overcome difficulties through various physical formations. In this relentless endeavor for ideal environments, the notion of utopia becomes particularly pertinent, as it incorporates both nostalgic visions of the past to reimagine a better future. As redounded in the works of David Harvey, he contends that "ideal cities" stand as the spatial embodiment of utopias, and later he adds that these spatial qualities incorporate the ideal state of the built environment and community (Cugurullo, 2013). Following Harvey's sentiment, in architectural discourse surrounding the 21st century, sustainability—specifically social sustainability—may emerge as a contemporary manifestation of utopia, incorporating community, equity, participation, justice, and hope. Lamentably, in reality, these ideals are often supplanted by consumer-oriented, technology-dependent, economic-reductionist, or ecological performance-based practices. Accordingly, this paper adopts a theoretical position to reappraise how current sustainability discourses obscure or dismiss the social ideals governing utopian projects at their core, often at the expense of energy efficiency, economic profit, and technological rationalization. Having delineated the distinction between models revolving around profit, performance, and technology-based and socially driven projects, where justice, participation, and community spirit articulate the urban vision, this paper will employ a critical reading of the two situations by demonstrating that the reductionist nature of such practices has the possibility of neglecting social ideals and presenting themselves as practices of management rather than meaning. Thus, embodying the tenets of social sustainability as a central architectural practice may equate to reclaiming utopian ideals—not only to alleviate environmental repercussions but also to articulate a renewed imagination sustained by community, hope, and justice.

KEYWORDS: social sustainability, utopia, equity, participation, community.

1. INTRODUCTION

Constructing the future through envisioned environments has been a recurrent pattern throughout history to address challenges ranging from the economical to the social, political, and environmental. Informing both the architectural discourse and navigating the future requires a certain degree of utopian thinking, regardless of its reason. Set in a prospective future and offered in materialized spatial forms, the utopia in future consolidated on the visions of its creators as intangible expressions on imagination and space (Marji, Thibault, and Hamari 2025, 3). They are conveyed in utopian thinking authentically, corresponding with Harvey's "spaces of hope" where utilization of narrative and imagination occurs to construct new alternatives for urban life (Marji, Thibault, and Hamari 2025, 3). Not every idea about utopia has emerged with a theme of returning to nature. At times, models, theories, and designs based on technological infrastructure have also appeared, shaped by the belief that current problems can be overcome through a future-oriented perspective. Sant'Elia's Città Nuova was born out of a vision that cities should function like "an efficient, fast-paced machine"(Angelidou 2015, 96). He depicted a new city with a massive scale and domineering features in a strong machine aesthetics with several bridges anchored to the building and connecting it to the environment in various levels. Moreover, the other fierce supporters of mechanically dominated cities can be also listed following; figures such as C. Price, M. McLuhan, Y. Friedman, T. Zenetos, and R. Meier (Angelidou 2015, 97).

In the 21st century, sustainability has started to approximate itself more to utopia as a contemporary framework. However, within mainstream planning and architectural practices, there is a danger that arises with sustainability being reduced to more metric outcomes, emerging as economic optimization and technological innovation for ecological performance. This paper aims to show that narrowing the definition of sustainability jeopardizes the social ideals contributing to human well-being, community, participation, and equity. By revisiting how sustainability operates through unearthing its intellectual origins, this study articulates the critical link between utopian imagination and social sustainability that has been overshadowed. This research aims to answer whether social sustainability can function as a more renewed version of utopian thinking in architecture and the built environment.

2. BACKGROUND: SUSTAINABILITY AS A CONTEMPORARY UTOPIAN FRAMEWORK

The intricate connection between the city-making entangled with the utopian endeavours to fashion better forms of life can be traced throughout history. Stemming from the articulation of desired form of community and life, David Harvey fashions utopias as spatial configurations shaped by social ideas (Cugurullo 2013, 67). Indeed, Harvey's stance signals a central claim, as architecture is not solely a physical manifestation but it actively orchestrates justice, good life, and community. At this point, the evolution from more classical utopian formations to contemporary sustainability discourse remains as a reconfiguration. Abundant with such imaginaries, architectural history offers several visions, ranging from Garden Cities, Broadacre City, eco-communes, and post-industrial views. These project often operate on the premise that the built environment can facilitate a better society. The Brundtland Report introduced new concepts on ensuring equity and meeting the needs for both future and present generations (Imperatives 1987, 35); however, the implementation of its principles received critisim from different figures. To illustruate, operating now as a discourse accommodating various conflict agendas, sustainability now is being called into question by several researchers (Redclift 2005, 224). As such, a similar sentiment appeared in Steve Connelly's (2007, 259) work "Mapping Sustainable Development as a Contested Concept" where he argued that "there have always been those who have deplored the term's vagueness and ambiguity, particularly if they see within this a danger that it can be used as a rhetorical cloak for environmentally and socially undesirable policies." The conceptual indeterminancy is reflected in different domains as well, affecting the Green Building Rating Systems where fixation on improved environmental performance with calculable indicators is called into question.

However, the fluid and unpredictable nature of the social sustainability cannot be confined into such qualifications. Accordingly, Marta Braulio-Gonzalo (2022, 1–2) and her team pointed out the followings about contemporary practices, emphasizing that the environmental dimension is the most prioritized factor in Green Building Rating Systems, utilizing technological optimization through energy consumption monitoring, renewable energy systems, and efficient building systems. Thus, these approaches may dismiss important social needs, varying from meaningful participation, social needs, public well-being, and cultural preservation. Following this sentiment, as stated by Nicola Dempsey (2011, 291) and her team in their article "The Social Dimension of Sustainable Development: Defining Urban Social Sustainability," the social dimension of sustainability encompasses community, social cohesion, order, safety, health, well-being, quality of life, as well as cultural traditions.

Moreover, it was stated in a report for the European Parliament that the existing indicators utilized by the Sustainable Communities framework lacked fairness and were insufficient, thereby requiring additional methodology (Colantonio 2009, 879). In fact, sustainability discourses are predominantly legitimized in terms of both its action and knowledge by the dominant discourse surrounding it. Following this sentiment, as put forward by Arturo Escobar (2011, 39), "If discourse is the process through which social reality comes into being – if it is the articulation of knowledge and power, of the visible and the expressible…" As a result, there is a danger lurking with the depoliticization of environmental issues beneath ecological performance metrics at the expense of social ideals, turning sustainability into a program of management of metric systems instead of transformation. Thus, this study aims to conduct a comperative reading of the the architectural case studies which either dismiss or encompass the sustainability principles through examining the potential of built projects in articulating or diminishing the social ideals.

Driven primarily by the metrics of energy efficiency, a wide range of contemporary projects put an emphasis on smart buildings, solar farms and eco-cities; thereby, strengthening the energy performance, cost-effectiveness and technological optimization. Thus, the beginning of the 21st century experienced the birth of ecologically based urban design and landscape architecture (Schröpfer 2020, 25). In fact, recent emphasis on eco-cities and transitions predominantly emphasizes ecological modernization and the role of specific techno-environmental 'solutions' in addressing urban, climate, and energy challenges (Caprotti 2014, 11). Demonstrating outstanding ecological performance, these models lack strong communal and social frameworks. In fact, achieving sustainable urban features demands a politically, socially, and economically inclusive approach with a people-oriented perspective through real collaboration and participatory processes to implement solutions and ideas. However, it should be stated that these projects may not perform as highly as their technologically fashioned counterparts, but they have the potential to excel in long-term social cohesion. The prevalence of technological sustainability discourse shifts the priority toward calculable values. However, with this understanding, a dangerous situation might arise where the dismissal of community values, cultural life, and equity gives way to a technocratic society functioning only on the basis of energy and profit. Under such conditions, sustainability is reconfigured as a new regime depleted of its transformative nature. Thus, within this discursive tension, this paper aims to locate both BedZED and Masdar City as they seemingly operate under the umbrella of sustainability, yet they radically differ from each other in their central considerations. While one of them accentuates social practices, the other prioritizes the technological spectacle. Thus, their disparity showcases the imbalance between contemporary sustainability practices and utopian imagination.

3. COMPARATIVE READING OF THE TWO CASE STUDIES

3.1. BedZED: Sustainability as Lived Practice Rather Than Technocratic Output

Beddington Zero Energy Development (BedZED) is the United Kingdom's largest mixed-use sustainable community, situated in the suburban area between the boroughs of Sutton and Croydon, south of London (Zhu et al. 2012, 1004)(See Figure 1). BedZED was built on a brownfield site and designed as a compact urban development to foster a walkable environment, with streets prioritizing pedestrians and cyclists, and

the project encouraged various innovative features (Oktay 2022, 841–42). According to a 2007 survey, residents expressed a strong sense of community within the complex, which they identified as the most appealing aspect of living in BedZED (Oktay 2022, 846). The importance of BedZED does not merely arise from the ecological strategies implemented; in fact, it comes from how environmental goals are embedded in everyday social practices. Thus, instead of relying on a fleeting visual emblem, the project is grounded in a modest and human-centric approach. The same sentiment emerges in the works of various academic figures. To illustrate, it stems from a vision of cultivating a vibrant community; thereby, BedZED aims to ensure strong connections between residents and their environment while prioritizing a high quality of life for its inhabitants (Zhu et al. 2012, 1004). At this point, a fundamental difference appears between BedZED and its technocratic, energy-conservation-oriented counterparts. In other words, BedZED aligns with a renewed understanding of sustainability, where social well-being and environmental performance operate in tandem. Moreover, the project challenges the predetermined notion of sustainability that stems from a narrow focus on technical performance, showing that sustainable outcomes cannot be attained solely through such a limited perspective.

More critically, BedZED approaches sustainability from a different angle and embodies a reflective stance. For instance, its emphasis on practice and the everyday lives of people within the context it is situated does not turn it into a universal template. In this manner, it acts as a form of cultural continuity rather than a green-washed imaginary. Furthermore, it functions as an agency shaped by collective consciousness, differing significantly from centrally orchestrated processes. In this way, BedZED is far from idealization and lacks perfection. However, its imperfections are navigated socially and transparently, not suppressed by an aesthetic fashioned by green innovation. Thus, it serves as an example of how utopian aspirations can be internalized into everyday practices through social content. It is therefore reasonable to state that BedZED functions as one of the tangible examples of how sustainable principles can be implemented to safeguard vibrant and environmentally friendly communities. It has garnered significant attention within professional circles as a large-scale, mixed-use sustainable community, thereby serving as a model for low-carbon, environmentally friendly housing developments worldwide (Oktay 2022, 841–42).

Figure 1. The overall framework of BedZED. From: Derya Oktay, "Promoting Energy-Efficient Neighbourhoods: Learning from BedZED BT - Sustainable Energy Development and Innovation: Selected Papers from the World Renewable Energy Congress (WREC) 2020," ed. Ali Sayigh (Cham: Springer International Publishing, 2022), 843, https://doi.org/10.1007/978-3-030-76221-6_93.

3.2. Masdar City: Technological Utopia and the Evacuation of the Social Ties

Situated at the opposite end of the spectrum, the world's first zero-carbon city—Masdar City—denotes an authority-imposed initiative and a meticulously designed experiment. Masdar City, near Abu Dhabi and designed by Norman Foster, was envisioned as an ecological experiment centered on desert reforestation and sustainability (Girot 2019, 115) (See Figure 2). It aimed to secure Abu Dhabi's position in the renewable energy sector, and the city reflects these broader efforts, being largely nurtured by economic agendas (Rapoport 2014, 142). In fact, sustainability begins to approximate a spectacle. The masterplan accentuates advanced mobility and infrastructure, with sophisticated technologies adapted to desert conditions. Following this sentiment, concerns regarding the operability of the project began to emerge. For instance, it was argued that although the idea of a new "green city" appears ambitious, it does not amount to a well-articulated vision, as it requires substantial technical investment, particularly in transit networks and desalination (Girot 2019, 115). As such, questions regarding the feasibility of such ambitious proposals have been raised by various figures, as the advertised visuals stand as a "green mirage," likening the project to an urban paradise while its reality strikes a different chord (Girot 2019, 115). Through this techno-utopic imagination, a visually embellished future is put on display; thereby, sustainability becomes commodified and expressed graphically instead of functioning as a fluid organism. In this manner, it ceases to be a utopia and turns into an overly ambitious technological delusion.

Figure 2. Masdar City. From: Christophe Girot, "Green Architecture: Landscape Topology and Context," Dense and Green Building Typologies, 2019, 116.

Indeed, this critique extends beyond Masdar City. Eco-cities, which incorporate economic, social, and environmental dimensions of sustainability, claim to respect environmental concerns (Rapoport 2014, 142). Yet recent studies on eco-city cases reveal different scenarios, as economic concerns often dominate them (Rapoport 2014, 142). Thus, this situation indicates a disparity between the concepts and actual implementation emerged during the development of the eco-city period (Rapoport 2014, 140). Masdar also conforms to this imbalance, as the dismissal of community life is not an accidental occurrence but becomes an inherent characteristic of the model, framing sustainability as a technologically sophisticated project and thereby omitting human-centric approaches and social ties. Thus, Masdar remains incomplete and lacks concrete results, regardless of the utopian vision it promotes, and the need to assess it according to its ecological benefits remains unresolved (Girot 2019, 115). Detached from the social dimension, the shortcoming of the Masdar City starts with its inability to articulate utopian imagery to reality.

3.3. Comparative Discussion: BedZED vs. Masdar City

Situated at the opposite ends of the sustainability spectrum, BedZED and Masdar City highlight the different outcomes generated by technological and social priorities. Accommodating sustainability through everyday practices with an emphasis on cohesion, participation, and community well-being, its human-centric approach shows the potential of social ties co-existing with environmental performance. Moreover, this approach also highlights that environmental performance can be attainable without sacrificing the social dimension; thereby enabling the integration of ecological agendas into daily routines. The modest interventions show the possibility of long-term sustainability goals beyond solely sticking to metrics. Regarding Masdar City, it approaches sustainability with a visually compelling language, environmental performance considerations, and sophisticated technological systems, resulting in an incomplete and fragmented notion of sustainability. Through this comparative analysis, it can be discerned that with BedZED, sustainability starts to function in lived practice through social relations. With the Masdar City example, it highlights the risk of a technologically fueled vision transforming itself into a spectacle; thereby losing its ability to become a transformative force. The contrast between the two case studies highlights the necessity of embodying social ideals within contemporary sustainability discourse.

4. CONCLUSION

Offering itself as a guiding framework, sustainability accommodates—and is shaped by—different and often conflicting priorities. Revealing a significant gap in sustainability discourse, the examples of BedZED and Masdar City position themselves at opposite ends of the spectrum: one sustained by social relations, the other fueled by technology. Beyond being a merely technical model, BedZED approaches sustainability as a flexible, fluid, and sometimes unpredictable practice by addressing themes such as participation, cohesion, and well-being. Regarding Masdar City, an entirely different scenario emerges, as social needs are pushed into the background by green development and technologically driven visions accompanied by powerful visuals. Rather than fulfilling utopian aspirations, this situation risks turning into an illusion. Reclaiming social ideas within the sustainability discourse is essential, as its earlier focus on justice, collectivity, and inclusion enabled people to imagine such futures. Thus, this study proposes the potential of social sustainability to act as a renewed form of utopian thinking in the 21st century. Instead of belittling utopian ideals grounded in belonging, collective hope, and equity, architects, designers, planners, and scholars should treat them as important tools for envisioning new futures. Strengthening this connection requires both intellectual and ethical sensitivity, as socially grounded visions enable sustainability to reach its full potential by shaping fair, livable, and inclusive futures.

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RADICAL HONESTY IN THE FACE OF THE SUPREMACIST COLLECTIVE WOUND

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ABSTRACT

In looking at narratives of trauma, migration, exile, and memory, scholars often focus on wounds caused by colonial paradigms of systemic violence and depersonalization. While these analyses are critical in the way that they create rich epistemic histories and narratives, they often ignore the deeper roots of trauma—the foundational scaffolding from which these violent practices are able to thrive.

Building on Jennifer Mullan's *Decolonizing Therapy* and in conversation with Rupa Marya's framework of colonial trauma, this paper argues that Supremacism—not capitalism or colonization alone—is a foundational logic of collective suffering. Through deep and intentional citation, this paper induces a lens of Black Feminist Theory, Critical Race Theory, Buddhist Philosophy, and Dialectical Behavior Therapy (DBT) to propose a call for what I term Radical Honesty.

Radical Honesty extends DBT's Radical Acceptance, calling not just for acknowledgement but for truth-telling around the Supremacism—specifically White Supremacism—that is at the core of collective wounds and collective trauma. Supremacism functions as the core base from which capitalism, colonialism, and other hierarchical systems anchor and continuously reproduce the conditions that give rise to cycles of oppression and harm.

In tension with what Eddie Glaude calls "the Lie" of American Exceptionalism, Radical Honesty insists on truth—truth around what inhabits collective conscious and subconscious: Supremacism. Radical Honesty functions as an individual and collective decolonial practice to combat the constant lies that normalize and uphold Supremacist systems. In creating space for discomfort but also for truth and accountability, this framework offers a path toward not only epistemic repair but also for deeper, more meaningful healing.

KEYWORDS: Supremacism; Radical Honesty; Collective Trauma; Decolonial Practice; Black Feminist Theory; Critical Race Theory

INTRODUCTION

In *Begin Again*, Eddie Glaude Jr. writes closely alongside the works and words of James Baldwin. There is an intimacy between Glaude and Baldwin, a closeness across time and space. Informally calling Baldwin the nickname Jimmy, Glaude carefully defines him as "a writer dedicated to speaking the truth" (Glaude 2021, 5). Central to Glaude's argument—and central to Baldwin's archival body of work as Glaude interprets it—is what he names "the Lie."

The Lie is the foundation through which Supremacy—specifically White Supremacy—is maintained and upheld as normative, making a racial hierarchy seem natural rather than constructed. Glaude defines the Lie as— "a broad and powerful architecture of false assumptions by which the value gap is maintained." (Glaude 2021, 7). These false beliefs are "the narrative assumptions that support the everyday order of American life, which means we breathe them like air. We count them as truths." (Glaude 2021, 7). The value gap is the supremacist belief that skin color determines who is able to participate fully in humanity, that skin color defines who is allowed access to the category of human. It is so pervasive, it is synonymous with the air we breathe.

Glaude believes the lie does damage not only to the social and political fabric of the United States but to each and every individual soul whose investment to the Lie tethers them to the very structures that exploit and distort their livingness. Therefore, the Supremacist collective wound can then be conceptualized as this investment in the Lie. This bio-psycho-social-spiritual historical Lie is re-enfleshed as it shapeshifts and contorts itself nearly invisible. Through denial, dismissal, dissemblance there is an obfuscation that is so normalized, it is nearly indistinguishable: plausibly imperceptible by those positioned to profit, palpable and embodied to those it damages.

In these narratives of trauma, migration, exile, and memory, Supremacism, not capitalism or colonialism alone, is at the foundational logic of this collective wound. Colonialism and capitalism are not the origin of harm in themselves; they are verbs through which supremacist harm is enacted. This wound is individual, it is collective, it is structural, it is relational. And, it is inherited. It is a wound that is constantly exposed, picked at, re-opened, and left scarred by constant and overbearing pressures like systemic violence, medical racism, and other marginalization. In Jennifer Mullan's *Decolonizing Therapy: Oppression, Historical Trauma, and Politicizing Your Practice* she points out that core wound as these deep ties or investments into colonial ways of living. Mullan's work can be put in conversation with the Lie in the ways that she identifies colonialism as the foundational scaffolding on which violent practices are sustained and reproduced.

To dress this wound and begin deeper healing requires that we address this wound, that we excavate down deep enough to unearth the root cause. To dress, we must address; we must literally name the architecture that maintains the Lie.

If the core wound is a lack of truth or ability to encounter the reality of Supremacism, I propose Radical Honesty as a method rooted in Dialectical Behavior Therapy's concept of radical acceptance. Marsha Linehan, founder of DBT, defines radical acceptance as the "complete and total acceptance, from deep within, of the facts of reality." (2015, 417). Linehan distinguishes that acceptance is not approval or being in contradiction of change. It is recognition of the facts of reality; it is meeting these facts with non-resistance.

Radical Honesty is my proposed method for engaging with the Lie, for combating the causes of the wound, and for creating and holding space for healing, processing, and just *being*. Radical Honesty functions in this way as both a decolonial praxis and a metacognitive method. Building on DBT's Radical Acceptance and Black Feminist and Critical Theory, it functions as a perception-shifting scaffold through which Supremacist logics are confronted and destabilized at both the individual and collective levels.

This paper will explore and define first the collective wound and the function of Supremacism. I will offer Radical Honesty as a Decolonial praxis. I will offer Radical Honesty as a perception-shifting metacognitive method and as a political method of resistance. Through engagement and extension of work by professionals and scholars like Glaude, Mullan, Marya, Sharpe, Brown, Harris, Linehan it is my aim to offer

a deeply theoretical and nuanced piece while holding my positionality as a White woman with care. I write not as an authority on Black pain, but as someone tracing the logics that have shaped my own misunderstandings and complicity.

EXPOSING THE WOUND

Wound: a noun and a verb. One can be wounded; one can wound. Medical guidelines for Wound Classification: "A wound forms when biological tissues like skin, mucous membranes, and organs are damaged. Different injuries can cause wounds; properly cleaning and dressing the wounds is essential to prevent infections and additional harm." (Herman, Popowicz, and Bordoni 2025). Damage to the biological tissues. The wound is damaged to the flesh, to the living tissues. It is a verb thrust upon us. And—it is a noun made of flesh distorted. This biological definition is fixed to the material torn flesh. It serves as a basis from which the broader terrain of what I define as the Supremacist collective wound can be understood—as something not just embodied in the physical body, but in the social body. It is a wound marred into our relational histories and modernities.

Existing work on trauma, migration, exile, and memory often centers the physical and psychic wounds (Marya 2020; Mullan 2023) as these are the most visible or apparent. Rupa Marya's work positions colonialism as an embodied inflammatory process that causes physical harm. Jennifer Mullan's *Decolonizing Therapy* extends this concept by examining how colonial processes imprint and reproduce themselves within the literal psyche. The gap that I am aiming to address then becomes the deeper theoretical and ideological frameworks that allow this constant wound[ing] to continue across time, space, and relationality onto different generations, systems, and people.

While Mullan does explicitly name the issues of colonialism at the core of collective and individual wounding, her analysis remains within the conversational sphere of colonialism. Her work's aim is not to evaluate what lies beneath, rather it functions as a tool to deeply interrogate and unpack colonial ideology. Her work triages the wound; it aims to stop the bleeding. I inquire what work is necessary to unearth what lies beneath? What is at the core of the colonial wound that allows for such seemingly effortlessly reproduction and resilience?

Mullan engages with Rupa Marya's work in which she models the ways that colonialism leads to physical inflammation in the body (Marya 2020). Marya's suggested framework—while I deviate from her core attribution to colonialism over Supremacism—exemplifies that colonial actions are not just historical, they are somatic, and they are present in the now both in our minds and flesh. While the living subjects of the narratives of trauma, migration, exile, and memory need not be told the inflammatory nature of colonization, Marya's work validates and situates this knowledge within the academic institution.

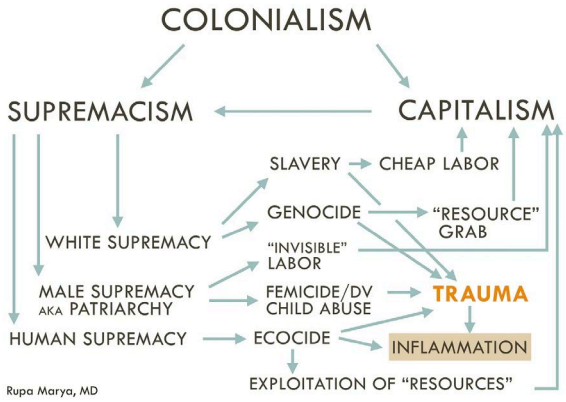

Figure 1. Diagram from Dr. Rupa Marya's work on Health and Justice — The Path of Liberation Through Medicine

There is a literal physical maiming, a wound that is formed and embodied from colonialism. (Marya 2020). The wound is not only something felt in the flesh, but also a social wound and mental wound. It is a spiritual wound. It is an injury that to constantly endure results a flattening of the self. It requires one to shrink to fit into neat racialized and gendered boxes. It requires a surrendering of authenticity and complexity.

This collective wound flattens across social positions though importantly, its effects are deeply asymmetrical. Whiteness becomes a form of property (Harris 1993) toward which one should always strive to have control. As legal scholar Cheryl Harris points out, there are deep ties to race and property law (1993); In U.S. legal doctrine, property owners retain the right of enjoyment, the right of exclusion, the right of possession, the right of disposition, and the right of control (University of Pittsburgh School of Law 2023)—meaning when Whiteness operates as property, it is not a racial category or symbol, it is an enforceable boundary from which others can be excluded or included. Who is in proximity to Whiteness becomes an ingrained cultural and legal component through which the Lie is invisible and protected, but also in which Whiteness is continuously positioned as innocent. Property being historically tied to both colonial and modern definitions of property become a microcosm of the way skin color and race are deeply married with capitalism. Whiteness as Property means that Whiteness becomes an enforceable boundary through which people can be included and thus also excluded.

The ties property law has to colonial standards of living and being is undeniable. Whiteness as property becomes a way for Supremacism to be maintained—especially given that for many, proximity to Whiteness becomes a way to access safety and humanity. The Lie renders this proximity unnamed yet naturalized and neutral; its true nefarious nature hidden behind the façade of legal and cultural entitlements.

Function of Supremacism: The Lie and The Truth

Glaude's Lie is the foundational architecture; it is the atmosphere that creates what Christina Sharpe calls the Weather: "the weather is the totality of our environments; the weather is the total climate; and that climate is antiblack. And while the air of freedom might linger around the ship, it does not reach into the hold, or attend the bodies in the hold." (Sharpe 2016, 104). The Weather just is, the Weather is natural. The Weather is not questioned, it is ambient. It is the overall climate that enforces and maintains an atmosphere of Supremacist thought, the perfect conditions to make hierarchy feel entirely normal, like the default. The Weather conceals, reproduces, and reinstates the Lie perpetually.

Supremacy is the complex grammar through which racialized-hierarchical systems speak to the Lie. The wound of Supremacy is both noun and verb. It is something done. It is something inherited. It is the force that takes air out of lungs—George Floyd: "I can't breathe."

To maintain a lack of curiosity about the Weather, Glaude identifies an additional falsehood— "America is fundamentally good and innocent" (Glaude 2021, 8). Within this framework, the United States' imperial pursuits abroad and its replicated colonial tactics at home are reframed as necessary, benevolent, or exceptional. Egregious acts of violence—historical slavery, the Chinese Exclusion Act, complacency in genocide, or modern atrocities such as the Prison Industrial Complex or ICE detention centers—are rendered as mere deviations or blips in a broader, linear narrative of American righteousness. This is central to the American psyche: the "practices that contradict our most cherished principles" (Glaude 2021, 8) are always explained as unfortunate mistakes or accidents instead of their reality as definite and defining features. Even slavery, under this logic, becomes a mistake rather than a key structural component of American History and past identity.

In naming Supremacism as part of the foundational wound or collective wound, this paper does not position capitalism and colonialism as irrelevant or secondary in nature or impact. Rather, it argues that these systems are vehicles of operations of a deeper logic. Supremacism is a fundamental worldview that

presumes hierarchy is natural and domination is order. It is a logic concerned with classification, neat organization, either/or thinking, and where nuance and complexity are sought to be flattened.

There is theoretical accuracy in naming colonialism and capitalism as forces that exacerbate Supremacist logics, however, I propose that Supremacism is what allows for these logics to be intelligible. It validates the Lie; the fantasy that hierarchy is truth. Colonialism and capitalism serve as vehicles through which Supremacist logics can materialize and globalize.

This paper defines Supremacism as the foundation logic within traditions like Sharpe's that understand anti-Blackness as a necessary component of modernity. If Supremacism operates as both the air we breathe, the geography in which we exist, the atmosphere in which we are engulfed (Sharpe's Weather) and it operates as the narrative itself (the Lie), then confronting the lie is not one singular task. Confronting the Lie requires an entire reimagining.

We must confront the entire supremacist grammar and challenge its racialized hierarchical oppression. When the core wound, the root of Supremacism is not confronted, sites/cites of reflection, diversification, and even listening become sites/cites of violence. With its root still intact, even efforts such as Diversity, Equity, and Inclusion can recreate exclusionary practices and still demand in disguise compliance to maintain proximity to Whiteness. Like Truman in The Truman show, we must see the staircase and exit sign that have been hiding in plain sight (Weir 1998).

The function of Supremacism is to maintain the Lie; Supremacism *is* the Lie. It is the naturalization of Sharpe's Weather, it establishes, protects and envalues Whiteness as property, and through a positioning of innocence it insulates American exceptionalism from critique. To attempt to expose this function—and ultimately dismantle it entirely—mandates a requirement for Radical Honesty. Radical Honesty is the disciplined practice of truth-telling as a method.

As a white woman scholar, I do not seek to theorize the root of Black suffering as an act of authority, but rather to interrogate the logics within which I, too, have been formed. This is not to be conflated engagement in practices like White guilt or shame that recenter Whiteness as victim. This is a radical confronting of what is real—even Supremacism—without evasion. It is allowing one's paradigm to be ruptured without evasion. It also recognizes the asymmetry of work that needs to be done.

Without Radical Honesty, any decolonial project risks re-platforming the very Supremacist logics it intends to undo. Radical Honesty, then, is not a therapeutic suggestion; it is a political method, an ethical demand, and a decolonial practice of truth-telling. It is a metacognitive reconfiguring of what is possible.

RADICAL ACCEPTANCE

Dialectical Behavior Therapy is comprised of therapeutic skills for establishing mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness. One of the skills for distress tolerance is Radical Acceptance, this skill is for when reality is especially or particularly challenging to accept. Radical acceptance is not approval of reality or being in opposition of change to reality. It is recognition of the facts of reality; it is meeting these facts with non-resistance. Linehan offers *turning the mind* as a method to get to radical acceptance (Linehan 2015). Radical Acceptance is a key piece of dismantling the Lie. In Dialectical Behavior Therapy, Radical Acceptance is a central practice that empowers clients to loosen their grip for a moment so brief that space can be rendered and felt. It is permission to stop bracing onto the status quo in effort to transmute it.

Therapeutic Skills like Radical Acceptance are like muscles that must be conditioned and trained for better performance. This is a laborious and often even painful process. Linehan validates the labor it is to confront reality. She says: "It usually takes multiple efforts over time to accept a reality that feels unacceptable. The skill of turning the mind toward acceptance is *choosing* to accept reality as it is." There is radical acceptance work to be done about the nature of the radical acceptance work necessary to make visible the Lie, let alone

the amount of labor necessary to reimagine. Nevertheless, to accept is to stop conflating feelings about reality with the reality itself.

This first step toward acceptance is one that typically must be taken repeatedly; it is a battle of Willingness and Willfulness. Willingness is relinquishing the idea that the self is separated from life, willingness 'is a realization that one already is a part of some ultimate cosmic process' and then throwing oneself fully into that process of Livingness. Willfulness is the opposite. (2015, 417). To dress/address the wound requires a fully embodied willingness.

Willfulness is the Lie; it is the status quo. Willingness allows for us to sit in and hold the space between. In Tibetan Buddhism the word Bardo refers to a transitional state, more literally Bardo refers to a "gap". This gap, "Most famously, it refers to what we experience in the period, or bardo, between death and rebirth, as described in *The Tibetan Book of the Dead*. More generally, the word may refer to the gap or space we experience between any two states." (Lion's Roar n.d.). Simply, a bardo is a transition, or rather it is finding space in the transition. It is "a tiny gap following the end of one activity and preceding the start of another." (Lion's Roar n.d.). In Buddhism, these bardos serve as opportunities to see and experience the true nature of the mind; "these bardos of everyday life are places of potential transformation." (Lion's Roar n.d.). A bardo is experiencing the space between. More secularly speaking, these moments of transition offer a chance for transformative growth.

RADICAL HONESTY AS A METHOD

Linehan writes for therapy, but she also writes to embolden clients with the psychoeducational skills to "live a life worth living" (2015). These therapeutic skills have the capacity to be expanded upon and shaped into theoretical method and praxis. Through a weaving of Dialectical Behavioral Therapeutic practice into the fabric of Critical Race Theory and Black Feminist Theory, we access not just dialectic thinking—but space to loosen one's grip on the Lie through new metacognitive practices. These are skills to dress/address the wound and hold space for when reflexivity is not only challenging, but painful. To sit in Radical Acceptance is to sit with and in the muddiness of life.

Dialectical Behavior Therapy solicits its participants to consider what it would be like to live in a state of Wise Mind. For clients to live in a state where they can hold multiple truths. This epistemic reflection is meditated and embodied through our Wise Mind. Linehan defines Wise Mind as 'walking the middle path'; it is the 'finding of synthesis between opposites' (2015, 213). Notably, this is not remaining unemotive or neutral. It is skillfully and mindfully harmonizing complex truths. We access our Wise Mind through Skillful Means—what Linehan calls "a set of skills for balancing being present to the moment with doing what is needed in the moment." (2015, 213). DBT often asks what is the most effective behavior in the moment? And while what is effective can be objective, deciding what is effective takes deliberate introspection into one's own values.

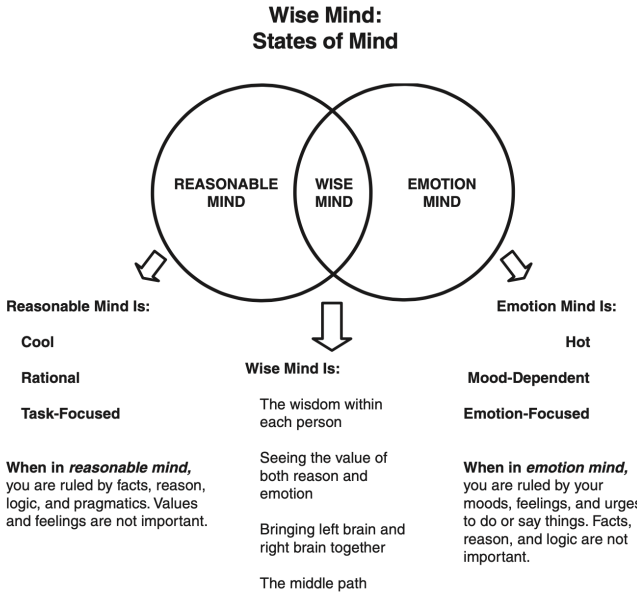

Figure 2. Diagram from Marsha M. Linehan, DBT Skills Training Handouts and Worksheets, 2nd ed. (New York: The Guilford Press, 2015), 50.

Linehan speaks to how through Wise Mind one can experience Spacious Mind, or "the opposite of rigidity and inflexibility" (2015, 214). A literal broadening of the mind, an expansion of the capacity of thought. Simply, Linehan (2015, 226) offers Wise mind moving beyond rigid forms of polarizing either/or thinking and instead offers us two simple words that expand consciousness itself: *both, and*. It allows for enough space to be created—a metacognitive bardo—that we can divorce ourselves from binary modalities of thinking. Wise Mind becomes a tool for radical perception shifts into greater, more nuanced awareness where the opacity of life becomes an opportunity for transformation.

My proposed method of Radical Honesty then becomes an extension of Radical Acceptance. To live otherwise, one must name the wound. We cannot walk around and pretend we are not wounded. Radical Honesty asks that we sit in the muddiness of life *and* that we tell the truth about it. We must acknowledge the pain, *and* we must still tell the truth about its origins.

Both are true. We are wounded, and the wound shapes our behaviors, *and* we continue to live. While roles are profoundly asymmetrical, we can be both victims and perpetrators of the system. We must allow for ourselves to sit in the muddy reality that it is to both hold space for our pain and our healing. Though we are shaped by harm, we still must name it. This act transforms Radical Honesty from a therapeutic or ethereal concept into living and breathing practice. It creates a conceptual bardo in which truth-telling can be a method of resistance. Truth-telling can resist dominant narratives that reinforce hierarchy, containment, and respectability as defined by Whiteness.

From a Black Feminist lens, truth-telling and a refusal to obscure the source becomes disruptive force that empowers illegibility, un-containment, and errancy. Radical Acceptance as a personal metacognitive process broadens perception to see and name the wound, the Lie. Acts of Radical Honesty as political praxis fundamentally chip away at and disrupt Supremacist notions. Their theoretical tension creates a radical intersection of space and opportunity between.

Truth-telling is not a new methodology within spaces of Black Feminist Theory and practice. In that line, Radical Honesty is not a demand for transparency or performance, it is not therapeutic storytelling. Radical Honesty does not seek resolution through merely naming. Instead, Radical Honesty specifically draws on the metacognitive methods of DBT to cultivate awareness of the Lie. It is a practice of interpersonal and intrapersonal interrogation and deep questioning of what one knows to be true.

Christina Sharpe alludes to *otherwise*. Her work *In the Wake* uses the Transatlantic trafficking of enslaved people as a framework to understand the living aftermath of chattel slavery. She argues that Black life, even consciousness, continues to be shaped by the logics of the slave ship:

Keeping each of the definitions of wake in mind, I want to think and argue for one aspect of Black being in the wake as consciousness and to propose that to be in the wake is to occupy and to be occupied by the continuous and changing present of slavery's as yet unresolved unfolding. To be 'in' the wake, to occupy that grammar, the infinitive, might provide another way of theorizing, in/for/from what Frank Wilderson refers to as 'stay[ing] in the hold of the ship.' With each of those definitions of wake present throughout my text, I argue that rather than seeking a resolution to blackness's ongoing and irresolvable abjection, one might approach Black being in the wake as a form of consciousness. (2016, 13-14)

The conditions of the wake shape consciousness and being, it is unresolved. It is a given condition; it is the weather. To escape the wake/weather, one must imagine otherwise.

Radical Honesty is a means for imagining what Black Feminist Scholars and scholars like Glaude have called *otherwise*. Otherwise is a world forged beyond the containment of our current one. Otherwise is not just changing the Weather around the ship, it is exiting the ongoing wake.

If Sharpe names the reality of being in the wake as consciousness of the unresolved presence of slavery, Radical Honesty becomes a practice of looking directly at that reality without romanticization, denial, or sanitization. In naming the ship, the hold, and the Weather as truths it opens the possibility for an otherwise, a collapsing of the Lie that allows new ways of being.

ACCESSING RADICAL HONESTY THROUGH ERRANCY

It is a goal of this method to be accessible; and, though rooted in practices from Dialectical Behavioral Therapy, this framework is not confined to the clinical space or in thinking with Christina Sharpe, in what I call the therapeutic hold. The goal of this framework is to extend beyond therapeutic settings for broader collective truth-telling practice.

Radical Honesty is an individual and collective practice of resistance through which one reclaims the authority to define truth for oneself, in defiance of dominant narratives that seek to discipline, contain, and order what truth should be. Radical Honesty functions as a refusal of Supremacist structures that demand hierarchical order and ordering — systems that construct reality through the illusion of superiority, coherence, and control. Through Radical Honesty, one resists not only imposed definitions of truth, but the very logics and grammar through which Supremacy organizes what counts as reality, legitimacy, and worth.

One accesses Radical Honesty through a witnessing of the self and others—and of narratives of trauma, migration, exile, and memory—without domination. To let people be illegible—to be *errant*. Amaris Brown's *The Errant Protestor* theorizes the "errant protester" as a Black subject whose emotion refuses to be captured and contained by institutional architectures of understanding, conceptualization, and reform.

We see a young Black woman break from a crowd of protestors and run errantly before disappearing through a set of cars. Dominant narratives paint her as a spectacle or unintelligible. Her emotion cannot be contained, it is illegible. It breaks the status quo of acceptable resistance. When we name this, we can begin to see the distortion the Lie tells. The Lie might have us understand her as breaking from status quo. We must name the distortion. *What story are we told to believe?* To practice Radical Honesty, one must first notice and name the distortion. Our dominant narratives paint the errant protestor as irrational, a disruption, incorrectly protesting, or even seeking attention. *Why am I asked to see her in this way? What is the first story that I am telling myself? Notice the first story I tell myself? Silently question: is this the Lie speaking?*

Next, Name the distortion: She unsettles status quo, expected decorum. *Pulling from DBT, Turning the Mind:* Reframing reactions as potentially having been been shaped by Proximity to Whiteness and need for

Supremacist order. By Turning the Mind, we can choose truth rather than comfort or ease provided by dominant narratives. *Reframe in Radical Honesty: I am uncomfortable because she unsettles the status quo, not because she is incorrect.* Even in this careful reading, I risk reproducing the very gaze I seek to undo—this is where Radical Honesty must sit in tension and remain a vigilant practice.

Through Radical Honesty we can *locate the Lie* and refuse a flattening of the story. We must locate the Lie itself and resist its reduction of the errant protestor to that which flattens her to spectacle. The Lie tells us she is unintelligible, really: *She is feeling emotion beyond what the system can contain.* The errant protestor refuses to be contained.

Finally, we must embody the truth: where do I feel this tension in my body? My chest? Throat? Stomach? Jaw? This is my body adapting to uncontainment, disruption of the status quo. *Breathe with it, witness it.* Integrate the experience: *How can I see the Lie and be Radically Honest in other situations?*

The representation of the errant protestor, as theorized by Amaris Brown, offers a material illustration of this refusal to be flattened into legibility within Supremacist hierarchies of containment and order. Brown writes:

Although I have made a case for the "one's" unmappability, there is something to be gained in attempting to locate the "one" whose e/motions have been disappeared under the weight of history but nonetheless linger within and beyond the corridors of the American university. Where black affective resistance and affective labor are not only acquired to build institutions, but to stabilize them. Under these conditions, the errant protester resists the university's consumption of black e/motion through the refusal to be fixed, stable, and knowable. (2024, 140)

Fixed, stable, and knowable—these are practically central tenets or goals of the therapeutic process. The clinician works to map the client's life, to give order to a client's emotional process whereas Brown demands unknowing and illegibility. Brown's subject cannot be mapped; e/motions are fluid actions that cannot be logic-ed.

There is that utter and total refusal to be fixed, stable, and knowable. To be fixed, stable, and knowable. *Fixed. Stable. Knowable*.

Stability is being mentally healthy. Mental health is the illusion of constant homeostasis in the unintelligible realities of Christina Sharpe's wake. Emotional regulation is a sign of resilience. In her (the errant protestor's) exit, she leaves the therapeutic hold. She will not be interpreted, she will not be read, she will not seek guidance. She is self-directed. She is not to have a verb enacted upon her. She is not to be fixed, stable, and knowable.

Brown in *The Errant Protestor* shows us the body is both a cite/site of knowledge production, but also of deep-felt sensations, feelings, and memories. This passage turns therapy and other self-reflective practices on their heads; a procedure that namely teaches to make sense of, to process, to understand, and to centrally regulate emotions. The errant protester insists that emotion can function as resistance, that one does not need to strive for legibility. The illegibility itself is what is transformative.

If the Lie demands Supremacist values of containment, racial hierarchical ordering and oppression, certainty, flatness, either/or thinking, then Radical Honesty cannot be accessed through certainty, mastery, or linear reasoning but through errancy. Errancy allows for a wandering beyond the false demands of Supremacist logics. Errancy allows for one to loosen their grip on the Lie. Through errancy modeled in Black Feminist modes of thought one can loosen the grip on Supremacist logic's demands to be *fixed, stable, and knowable*. Though errant processes of thinking and ways of being one opens themselves up to the possibility of thinking in more nuanced ways. Errancy creates space for one to open themselves up to seeing truth as relational, interpersonal, redacted, and often opaque. Errancy becomes the epistemic condition necessary for Radical Honesty to take shape not as one singular act or moment, but as an ongoing condition to oppose or *shift* the weather. Errancy becomes a framework for Radical Honesty to become a sustained destabilizing force to the Lie. This embrace of errancy interrupts the status quo.

IMPLICATIONS & INCORPORATION

Radical Honesty is a therapeutic method. Radical Honesty is a method of resistance. Radical Honesty is a politic, a grammar for living.

This paper has served dual purposes. On one hand, I have mapped and examined narratives of trauma, migration, exile, and memory while considering core Supremacist wounds.

On the other, I have asked the reader to take part in labor. Radical Honesty as a method is labor. In response, Glaude calls upon us to be clumsy midwives. This paper extends an invitation to take part in a personal reckoning. It is a call to do what Mullan's decolonial framework calls us to do. By no means is this work easy, for reflection is work, it is deeply personal and interrelational labor through which we pick at and expose the wound. In *Begin Again* Eddie Glaude Jr. sits with James Baldwin across time as he was living during a period of immense personal pain, following the deaths of Black Civil Rights leaders like Martin Luther King. Baldwin reflects on a world desperate for transition. Glaude discusses Baldwin's work on his piece *No Name*:

Jimmy understood that something new was desperately trying to be born, but the old ghosts had the baby by the throat. He wrote in the epilogue to No Name in the street: 'An old world is dying, and a new one, kicking in the belly of its mother, time, announces that it is ready to be born. The birth will not be easy, and many of us are doomed to discover that we are exceedingly clumsy midwives. No matter, so long as we accept that our responsibility is to the newborn: the acceptance of responsibility contains the key.' (as cited in Glaude, 2020, 206).

Bluntly, both Glaude and Baldwin here understood that the only way out is through. He points to the "ghosts" that could potentially haunt this new world if the realities behind White Supremacy, Colonialism, and Patriarchy are not directly confronted. Without a true reckoning with these systems and the harm they cause, the cycle is bound to repeat itself—just like Buddhism offers the analogy of Samsara, we too, can be free of this repetitive cycle by seeking Radical Honesty and to uncover the deep Supremacist injustices built into Western life.

There was stability in leaving the wound be, where dressing/addressing the wound disrupts the status quo. There is pain in changing the bandages, tending to the wound may cause unintended irritation. Nevertheless, this is healing, the labor of healing. To dress/address the wound is painful. In Buddhism, the Yana is the means to escape suffering caused by the dualistic illusion of life. It is the path to enlightenment, the ceasing of Samsara, or the cycle of birth and death. Yana literally means vehicle. While there are commonalities in methodology and different behind vehicles one can try in Buddhism such as the Mahayana and Hinayana vehicles, it remains an individual experience (Dokhanm 1998). One can use Radical Honesty about their perspective of the ride.

I must recognize, there is asymmetry in the work to be done in Radical Honesty. For those structurally protected by the Lie, Radical Honesty demands a renunciation of innocence. For those harmed by it, Radical Honesty may mean refusing to internalize, absorb, invest, subscribe to, the Lie. The costs of disclosure are uneven; truth historically has not always been rewarded particularly for marginalized people.

Radical Honesty is not to be mistaken for an individualization of responsibility for structural harms or a therapeutic assignment in place of structural change. It is also not a prescription for Black trauma. It is not intended to pathologize Supremacism or reassignment responsibility of violence onto the individual psyche. Rather, I position Radical Honesty as a methodical and metacognitive condition of possibility for decolonial work. I position Radical Honesty as a necessary intervention or interruption of the dominant narrative of the Lie. This method is limited in that it is not sufficient for transformation on its own, but it is essential in opening up to possibility for structural change to be intelligible.

At an institutional level, Radical Honesty might look like a refusal of projects and policies that allow for a reproduction of the Lie. It is a sustained refusal within practices that leave the Lie as the natural default.

This framework moves beyond story-telling by offering a perception-shifting framework that offers people a new way to relate to themselves and others. Radical Honesty is an extension of Glaude and Baldwin's invitation to become clumsy midwives, to embody willingness when it may also be painful. As we labor to birth a new world, we must also tend to the wounds. We must dress/address the wound and in doing so, we may find new soreness, new tenderness that was not there before. Irritation may arise, inflammation may enrage, and still, truth-telling offers expansive healing. Radical Honesty in this context serves both as a personal tool of reckoning but also offers a collective path, or yana, in Buddhist philosophy–into a liberated, more empathetic and ethical inner and outer world. While this seems impossible, we must imagine otherwise.

Katherine McKittrick's *Dear Science and Other Stories* centers the idea that how we cite in academia and who we cite in academia matter, the place from which we theorize matters because it maps the way we produce knowledge and academic discipline—"Indeed, a we read and read and reread, we notice we cannot seem to study otherwise… Method-making is the generating and gathering of ideas across with outside within against normative disciplines—that seek out liberation within our present system of knowledge." (2021, 46-47). Citation, research, and writing are thus political acts as the discipline of the discipline can function as sites to reproduce the Lie. Citation cannot just be references or footnotes; it is a generative process. We choose our citations based on our perceptions of the archive, of what is available to us, within our fields.

Citation matters as who and what you read and cite determine in which soil you plant your mind's seeds. Truth-telling through Radical Honesty proves more fertile ground. By grounding ourselves in sites/cites that aim to center resistance of the Lie, though we are always vulnerable to reproducing it, we can envision a possibility beyond dominant narratives.

As a student of both interdisciplinary scholarship and clinical mental health, my disciplines are often in deep tension with one another. Clinical Mental Health Counseling asks clinicians to diagnose, stabilize, understand, and conform within standards of being. Clinical Mental Health Counseling uses the scientific method to pinpoint behaviors, to develop evidence-based treatments, and standardize. There is an 'exactness' required on something as complex as Livingness itself. Interdisciplinary Scholarship like Black Feminist Theory focuses on un-containment, destabilization, unknowing, and illegibility.

Yet, we can sit in multiple truths; this fragmentation can be something generative through which new ways of perceiving and being can be crafted. From this splintering, we can hold space for the possibility that both structure and uncontainment can offer. If we allow for clinical practice and critical theory to meet, what do we find in the space between? What do we find if we pause long enough to sense the conceptual bardo? In this way, Radical Honesty does not collapse these multiple disciplines, instead it honors the tensions between them as generative sites/cites of knowledge.

Through this paper, I aim to model McKittrick's praxis of citation as politic. Though often opposing, there is a never-ending necessity to hold multiple truths. The fabric of this paper is woven through, patched together, and deliberately stitched with theoretical lenses from both of my academic disciplines as a way to force evolution, to think in ways not thought yet. By beginning with frameworks that fundamentally ask us to not only engage in truth-telling but to *value* truth-telling, there becomes even the tiniest space—bardo—for shift from the Lie.

CONCLUSION

This paper has argued that in our living narratives of trauma, migration, exile, and memory Supremacism is a foundational logic of the collective wound. And, that Radical Honesty functions as both a method and a medium of transformative healing. This work does not seek to define or speak for Black experience or realities, but to confront the supremacist frameworks shaping the conditions through which I have been

taught to understand and more often misunderstand that experience. This framing reflects my theoretical and critical attempt to understand supremacist logics, not flatten or generalized Black lived experience.

Radical Honesty is the work of facing this collective wound. Though the risk is ever-present that our practices may serve as reproductive sites for the Lie, the practice is a necessary one. To heal, the wound must be dressed/addressed.

It is beyond the scope of this current work to map otherwise; to fully define the topography of what lies beyond current conceptual frameworks would require a different project and line of questioning. Radical Honesty gives us access to start charting the map, to start understanding the landscape.

To leave without a clear map, or even clear starting place beyond glimpses of otherwise—is not a failure. However, Linehan's therapeutic goal of aiding clients in creating a *life worth living* and to which I add, a life worth living in Radical Honesty—is an acceptable proposed coordinate from which to start. I am leaving you not with clear directions but with a framework for shifting perception. What I have attempted to craft is a woven material of theoretical, therapeutic, and experiential richness that your current perception can embrace what it might mean to rupture and collapse currently available frameworks of understanding.

Through radical forms of truth-telling, an entirely new level of perception and reality become possible. We begin to embody Otherwise; this embodiment is what brings otherwise into the flesh. This is what births a new world. And, though we are clumsy midwives, this embodiment makes the birth possible.

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VITALISTIC ARCHITECTURE: VAN DE VELDE'S NIETZSCHEAN SPATIAL CONCEPTS

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ABSTRACT

Henry Van de Velde (1863–1957) was an important Belgian architect, artist, and designer greatly inspired by Friedrich Nietzsche. To explore the ways in which Nietzsche influenced the brilliant redesign of the *Nietzsche Archive*'s building by Van de Velde, it is necessary to enter a particular intellectual atmosphere of the late 19th century. Nietzsche contributed significantly to the articulation of this particular climate, namely *Lebensphilosophie*, a complex stream of ideas in which "life" is conceived metaphysically as a primary transformative force, irreducible to the positivist methods of science. The core of *lebensphilosophie* is a reassessment of the concrete, irreducible immediacy of experience (*Erlebnis*) and the fullness of its individual expression.

In the present paper, I claim that Velde is an exponent of *Lebensphilosophie* in spatial design, articulating what I would like to call a "*vitalistic architecture*". He tried to apply Nietzsche's neo-vitalist theories of the body and the will to power to the interior architecture and organic decorative configurations of the *Nietzsche Archive* in Weimar. To develop my argument, I analyze Nietzsche's idea of a "great style" and his thoughts on the nature of architecture, and then I compare them to Van de Velde's proposed three Nietzschean spatial concepts, especially his vast and persistent research on the expressive line, rhythm ("*rythmicité*"), and dynamic ornament, where Nietzsche's and Kessler's influence leads to an original contribution to the philosophy of design creativity.

KEYWORDS: Henry Van de Velde, Friedrich Nietzsche, Count Harry Kessler, vitalistic architecture, rhythm, *Lebensphilosophie*

INTRODUCTION

Henry Van de Velde (1863–1957) was an important Belgian architect, artist, and designer greatly inspired by Friedrich Nietzsche (Teirlinck, 1959, pp. 5-6; Fischer, 2012; Dal Co, 1990, pp. 182, 186). His impressive presence at the First International Exhibition in Dresden in 1897 and its counterpart in Munich in 1899 launched his reputation in the cultured circles of the legendary magazine Pan (1895–1901), organized around August Strindberg in Berlin. The "Pan's Circle" included the art historian Julius Meier-Graefe, the Nietzschean baron, industrialist, and diplomat Eberhard von Bodenhausen, and, last but not least, Count Harry Clemens Ulrich Kessler (Hollis, 2019, pp. 111-115). Velde is summoned to the court of Duke William-Ernest, through the mediation of Kessler and Nietzsche's sister Elizabeth (who has already moved the *Nietzsche Archives* to the city of Goethe), as a consultant for the reform of the applied arts. In 1902, he settled in Weimar, began his seminary (a precursor to the Bauhaus courses), and founded (1905–6) a School of Decorative Arts, for which he designed the building. He remodeled the *Nietzsche Archive* in 1903 (Easton, 1996, pp. 495, 499-500, 510-511).

I claim that Velde is an exponent of *Lebensphilosophie* in architectural design, namely a complex stream of ideas in which "life" is conceived metaphysically as a primary transformative force, irreducible to the positivist methods of science. The core of *lebensphilosophie* is a reassessment of the concrete, local "*immediacy of experience*" (*Erlebnis*) and the fullness of its individual expression (Beiser, 2011, pp. 354-357; Audi, Virvidakis, Xiropaidis, 2011, pp. 812-813, 1361-1362, 1369-1370; Bynum, Browne, Porter, 2019, pp. 252-253, 720-721, 723-724, 726-727).

I believe Van de Velde tried to apply Nietzsche's neo-vitalist theories of the body, place, and will to power (Hollis, 2019, pp. 116-118) to the interior architecture and organic decorative configurations of the *Nietzsche Archive* in Weimar (Sembach, 1989, pp. 88, 152). I argue that Nietzsche's influence on Van de Velde's design philosophy leaves its traces in his vast and persistent research on the expressive line, rhythm ("*rythmicité*"), and dynamic ornament (Schmückle von Minckwitz, 2015, pp. 189, n. 38; Zurstrassen, 2014, pp. 2-3). For reasons of clarity, I will schematize Nietzsche's influence on Velde into three distinct "*spatial concepts*".

But first, let me briefly analyze my experience of visiting the *Nietzsche Archive* in Weimar.

THE *NIETZSCHE ARCHIVE* IN WEIMAR: A PHENOMENOLOGICAL DESCRIPTION

The soft, organic lines of the furniture, the red/pink colors of the curtains and paneling, the various materials (beech wood, brass), and the overall and individual wave-like geometries create a strange feeling of intimacy and distance at the same time. I sensed immediately Velde's attempt to frame the entrance, to focus the gaze on a centripetal force, which, through the single curve of the windows and the central doorway, directs the gaze into the dark shadow of the threshold. But my attention was captivated by the plastic detailing of the extrusions in every material: the ceramic pattern, the wooden frames and window details, and, of course, the door's striking knob: a spiral labyrinth. Those elements enlivened the facade, giving it a tactile sense of depth. Here is an architecture that appeals primarily to the stimulation of my body's sense of touch.

Inside the main room, a continuous, curved furniture-sitting room, transformed into niches, drawers, and shelves, was a topological, peripheral presence that showed Velde's design ability. The undulating line, moving continuously, unfolding incessantly, perpetually, as if by a single breath of inspiration, created recesses and excesses, bright and shadowy areas, surfaces, showcases for sculptures or manuscripts, spatial events—a line-place.

Velde uses fixed 'furniture' and its extensions in space to create tension, hierarchy, thresholds, staging, drama, narrative, and theatricality. Featured transitions. Places to welcome the body, corners of habitation, in a given, neutral frame: places to curl up, nests-shelters. I felt the library furniture embracing me, nurturing my body, and welcoming me like a nest. The Absolute Inside. My attention was caught by a marble

column, ending in a bust of Nietzsche. Its placement on a slightly raised wooden floor, combined with the diffused, dim light from the three windows behind it, gave the impression of a sanctuary, or rather, an altar.

I claim that the *Nietzsche Archive* is a strange, modern reliquary of the philosopher as a saint, a prophet of new values. Velde attempts to reconstruct the shape of the void resulting from the imaginary habits of his life, as if Nietzsche's physical presence is still felt: writing, reading, and making music. The archive is a set of relics, or traces. Even the *Nietzsche Monument*, the later unbuilt project of Velde and Kessler before the stadium, has a temple-like, enclosed space, an altar-relic of pilgrimage, of *reliqua*.

Velde's emphasis on bodily habits and gestures to shape the interior space of the archive is consistent with Nietzsche's mature philosophy of creativity, as expounded especially in *Ecce Homo* (Nietzsche, 2005). I have argued elsewhere that in this supposed autobiography, Nietzsche develops a "climatological regionalism", where the basic assumption is that place has a decisive influence on the rhythm of the body. In this perspective, the ultimate purpose of Nietzsche's "rhythmic instinct" is therefore the birth of the art of the "great style", which is founded on the "great rhythm" of physical gestures that communicate internal states of passion externally through signs. The "great rhythm" aimed at by the late Nietzsche is thus a derivative of a holistic stimulation of the bodily schema, of bodily empathy, which does not exclusively privilege vision and visuality but the entire affective system of the human organism (Terzoglou, 2022, pp. 53-56, 61-62). Velde was aware of these Nietzschean ideas. In his autobiography, he writes: "*I was prospecting through Nietzsche's editions and manuscripts in the Archives to find out whether the philosopher had formed an image of architecture and whether he had defined the aesthetic system of the "grand style", which he says does not need to please but is a law among laws*." (Van Loo, 1995, p. 357, my translation). I claim that Velde's development of a Nietzschean "Grand Style" as a vitalistic struggle for expressive lines is articulated into three thematic moments, or, better, spatial concepts.

THE FIRST NIETZSCHEAN SPATIAL CONCEPT: AFFECTIVE REGIONALISM

The cutting edge of this vitalistic struggle is rooted in Velde's two early texts of the 1890s, namely *Déblaiement d'Art* and *Aperçus en Vue d'Une Synthèse d'Art*, where he denounced the slavish imitation of the styles of the past (Ploegaerts, 1999, pp. 235, 252 n. 5). It's useful to recall here Nietzsche's passionate attack, at the beginning of the first *Untimely Meditation*, against the 19th century's eclecticism of styles and uncritical imitation. He writes: "*Culture is, above all, unity of artistic style (Einheit des künstlerischen Stiles) in all expressions of the life of a people. The opposite of culture, barbarism, is the lack of style, the chaotic confusion of all styles.*" (Nietzsche, 1873, my translation). Velde's theoretical thought attempts to overcome precisely this *Tumult aller Stile*. The decline of art is the result of the separation of the fine or 'high' arts from the 'useful' or lesser arts. Velde preaches the need for a new unity between them, against the ugliness (*laideur*). Velde passionately praises beauty. The loss of the original unity of the arts and the individualization of artistic expressions led to the parade of historical styles, or historicism, an extremely negative phenomenon. The restoration of this precious unity will reconstitute '*the harmonious silhouette and rhythmic structure*' of the wholistic edifice of culture (Van de Velde, 1893-1894, pp. 420-421, 20-21, 27).

This turn shares with Nietzsche the desire to affect the immediate fabric of life through a new, applied physiology of art. This explosive shift involves a new idea of transcending the decadence of 19th-century styles: their dismantling through *bodily experience*, from the inside out, from the detail of the interior to the whole. In this light, Velde's obsession with re-designing interior space, from the body, furniture, object, or jewelry to the total shell, can be understood as a Nietzschean gesture of deconstructing established styles, rules, and systems, that is, a 're-evaluation of all values', from below (Gleiter, 2020, pp. 1-8).

In this perspective, the manual quality of the lines of objects acquires a sacred character in Velde's eyes. He discovers in this transformation of everyday life an almost religious mission, which he begins to follow with zeal and unprecedented passion. He calls his lectures (at the Académie Royale d'Anvers) *sermons* (Teirlinck, 1959 p. 5) and refers to his work as a sacred ministry, as a mission, an '*apostolat*', that is, using theological

terms (Zurstrassen, 2014, pp. 2-3). Velde was an advocate of the spontaneous, free will of the artist. According to the Belgian visionary, the latter is in ontological opposition to the rigid, formal rules of industrial production, which would lead to barren, sterile imitation without creative imagination.

The fundamental differences between Velde's theory of 'linear freedom' and "*Raffinement*" and the dominant standardization doctrine of modern functionalism were highlighted in Velde's dispute with Hermann Muthesius at the Werkbund's seventh annual meeting in Cologne in July 1914 (Escritt, 2000, p. 69). The conflict between the artist's 'inner demon' and the 'diplomats of the formal' (Robert Breuer) reveals the implicit clash of deeper, related conceptual structures (Campbell, 1978, p. 68). August Endell identifies the philosophical root of the Werkbund's problem or dilemma: why should we prefer uniformity (globalization, technological, mechanistic civilization) to diversity (regionalism, organic, unitary culture)? (Campbell, 1978, pp. 57, 60-61). Velde contrasts the monotonous, uniform internationalisation of Muthesius' exports with the *local*, inspired, *differentiated* production initiated by a circle of special commissioners. The place here, locality, is the womb, the germ, the embryonic nucleus of an earthy, familiar quality that guarantees the evolution of creative thought and action towards ever wider spheres, like the organic growth of a plant (Muthesius/Van de Velde, 1914, pp. 28-31).

In Velde's first polemical manifesto, entitled *The Purification of Art* (1894), his idea that the individualization of the arts, their transformation into the property of the bourgeoisie, and their detachment from their original unified matrix led to their a-topia—the ability to move freely from locality to locality without a definitive *placement*—is characteristic. According to Velde, the true art of the future will be a *new regionalism*, a unified localism, where all the arts will be merged together in an intensive way. This new regionalism is understood as a return to 'true ornamentality' (*ornementalité vraie*) that fluidizes the strict boundaries of the arts into a new architectural language that absorbs them again into a spatial whole (Van de Velde, 1895, pp. 4-21, 24). He writes: "*There is already an expectation of a décor that corresponds to the state of our soul (état d' âme), to the normal conditions of life, and to specific places in our homes*" (Van de Velde, 1895, p. 21, my translation).

The true architecture of the future, called *décor* by Velde, meaning 'unified environment', will achieve the exact correspondence between the mood (*Stimmung*) of the inhabitants and the material place that welcomes or provokes it: a balance, a harmony that will lead to *sérénité*. How far are we here from contemporary theories of 'attunement' or 'well-being'? Even Velde's statement in the remnant manuscripts of the design method he was working on (FS X 160), that "*beauty is an atmosphere*" (Lemaire, 2013, p. 21), brings him close to the most radical, vitalistic versions of phenomenological research today. I claim that the core idea here is the concept of the "state of the soul" (*état d' âme*), which I believe bears a similarity to Nietzsche's conception of *Stimmung* (Neumann (ed.), 2015, pp. 585-586, 605). The first Nietzschean spatial concept of Velde's design philosophy can be called *affective regionalism*.

It is interesting to note how this early Nietzscheanism of Velde, his "affective regionalism", has a distinctly socialist, almost anarchist, connotation. Let us recall here the early reading of anarchist and socialist thinkers in the small provincial village of Wechelderzande, in the period 1886–1890, where Velde assimilated ideas of Bakunin, Kropotkin, Marx, and Stirner. Moreover, he had personal contact with Charles Verlat, a close friend of Pierre-Joseph Proudhon, and shared the vision of Elisée Reclus, with whom he corresponded (Lemaire, 2013, p. 90), of "a prophecy of the return of the reign of beauty on earth and of a just and humane social regime", as Erik Buelinckx reminds us (Buelinckx, 2013, pp. 33-34, 36, 38-39). The root of Van de Velde's early ideology is anarchism. It is perhaps a version of a radical, Platonic, idealistic *anarchism of regionalism*, if this paradox is correct: the belief in the moral influence of beauty, the campaign against standardization, the fanatical support for the absolute freedom of the artist, and the regionalist insistence on context are the conceptual markers of this type of anarchism.

THE SECOND NIETZCHEAN SPATIAL CONCEPT: THE DEMONIC LINE AS A RYTHMO-POEISIS OF CULTURE

Count Harry Graf Kessler, an enigmatic yet fascinating figure of European culture in the crucial years of transition from the 19th to the 20th century, also breathed the atmosphere of the "philosophy of life" (Easton, L. M. ed. 2011, pp. xiii, xvii). Kessler's 'reading' of Nietzsche sets the context and the theoretical atmosphere for understanding what I would like to call Velde's "*lebensarchitektur*". The Count's visit to Velde's house, the *Bloemenwerf* in Uccle, in March 1898 (which he describes as "Reinlichkeit", purity) (Schmückle von Minckwitz, 2015, p. 187, n. 7), solidifies their friendship and collaboration, based on a shared admiration for Nietzsche (Easton, 1996, p. 500). They discuss the new edition of Zarathustra, the concept of line, and, above all, rhythm (Hollis, 2019, pp. 106-108). Friederike Felicitas Günther, in her study (2008) on the concept of rhythm, measure, and time in the research and lectures of early Nietzsche (1869–1872), has shown that they transcend a narrow philological field and are an organic part of a much more ambitious anthropological project. This Nietzschean project is concerned with interrogating the somatic foundations of the normative order of culture as a whole.

I argue that Velde's holistic vision of a *Gesamtkunstwerk* in the material, everyday place of life is quite correlated with the Nietzschean program of reviving a comprehensive strategy of 'rhythmizing' culture, starting from the basis of disciplining the body into forms of order that encapsulate spiritual processes of construction, education, and *Bildung*. In this perspective, architecture, poetry, and even dress are cultural crystallizations of an implicit, fundamental order of organization of the world rooted in the human body, in its physiology, the tone of voice, the rhythm of speech, the structure of its movement, and its vital force. I would like to call this cultural program *rhythmo-poiesis* (Emden, 2011, pp. 125-126).

Kessler interprets Velde's design inspirations and motifs as coming from the "*rythmes inédits*" of the eternal, repetitive movement of the sea (Stölzl, C., Alvarado, J. eds. 2016, p. 129). The Belgian designer will affirm that the '*demon of the line*' within him is often awakened by the sight of the changing relationship between sea and shore (Hollis, 2019, p. 44). The core idea in this second Nietzschean spatial concept is the dynamic, dancing line, which acts as a repetitive musical motif. According to Priska Schmückle von Minckwitz, the Count's influence on the design of the large candlestick of 1898/99, where "*the dynamism of the lines dances incessantly, like spring water*", certainly lent a Nietzschean, vitalist tone to Velde's production of that period (Schmückle von Minckwitz, 2015, pp. 169, 170-175). Velde, in his letters (letter of 2.9.1901), speaks of the "rhythmicity" ("*rythmicité*") of the organic form of objects, clearly influenced by his discussions with Kessler (Schmückle von Minckwitz, 2015, p. 189, n. 38). The aim now is the rhythmic continuity of materials, decoration, surfaces, and space. According to Velde, continuity of line, as a programmatic principle of the new design, reveals a *will to unity* that will enhance the physiological health of the nerves. What could be more Nietzschean than this Simmelian *Nervenkunst*? (Dal Co, 1990, pp. 189, 194). Kessler, therefore, also influenced Velde's theoretical thinking, according to which *each line is a force* that affects the psychology of the observer (Schmückle von Minckwitz, 2015, pp. 178, 182-183). In 1902, Velde published his essay "*The Line*", having assimilated the thoughts of Kessler's letter from Athens (25.11.1900) on the Mycenaean decoration and the related (Kantian) idea of its a priori existence in us and not in nature (Schmückle von Minckwitz, 2015, pp. 183-190; Van Loo, 1995, p. 455).

Kessler, who studied in Leipzig with Wilhelm Wundt, had assimilated the new psychological aesthetics of his time, as evidenced by his essay "*Kunst und Religion*", published in Pan magazine in 1899. There, he merges the empathic 'revelation of the ego' through the experience of works of art (*Selbstenthüllung*) with the vitalistic flow of rhythm that animates matter (Schmückle von Minckwitz, 2015, p. 184). Is it a coincidence that three years later, in 1902, Velde published an article in the journal *Kunst und Künstler* entitled *Die Belebung des Stoffes als Schönheitsprinzip* ("*The Animation of Material as a Principle of Beauty*")? (Kuenzli, 2019, p.23). Laird Easton understands how Velde's reactivation of the *Nietzsche Archive* as a gathering place for the intellectual elite (Easton, 1996, p. 512) is an integral part of a larger, much bolder

experiment by Kessler; his aim was to make the *Third Weimar* a center of aesthetic modernism in Wilhelmine Germany at the time.

I would like to argue that here culture is conceived as a holistic 'Place Ballet', where the notion of kinesthesia plays a crucial role. The *moving body* (Husserl's *Leib*): this is the vitalist field where Kessler encounters the deeper currents of the Nietzschean fluid *Lebensphilosophie*, the ephemeral and eternal becoming of things and forms (Easton, 1996, p. 520). It is no coincidence that the Count has been called by his scholars "the *Flâneur* through Modernity" (Stölzl, C., Alvarado, J. eds. 2016, pp. 106-112) and Nietzsche "the *Philosophical Flâneur*", by Jörg Gleiter (Gleiter, 2009). Kessler contrasts instrumental rationalism, the economism of bourgeois, materialistic, positivistic ideology, with the heart (Stölzl, C., Alvarado, J. eds. 2016, p. 124), the pursuit of cheerfulness, a joyful mood (*heiterkeit*) that depends on physical and mental strength. The Nietzschean overtones of joyful science are evident here. The bearers of this mood are, first and foremost, artists, thinkers, and poets (Easton, 1996, pp. 507-508, 531).

The Count indeed refers to the Nietzschean workshop of the "Third Weimar" as an attempt to re-establish a "Renaissance court" (Hollis, 2019, p. 143). In Nietzsche's teachings, he found a father figure who articulated the vision of a "New Man", an organic part of the 19th-century myth of a "higher life" (Norbert Reichel). This new man, the creator of new values, would act as a unifying field for the fragmented and disintegrating culture of the late 19th century, which was the result of the rapid industrialization of European societies and economies. At the same time, it would be pervaded by a Promethean ambition that would be able to transcend nihilism (the result of the "Death of God"), healing civilization like a doctor. Kessler adopted this Nietzschean idea of the Superhuman and gave it additional dimensions: his vision, his mission, he believed, was to unify Goethe's philosophical culture, Bismarck's politics, and Nietzsche's aesthetics into a "New Classicism". This classicism was based on the civic humanist tradition of Goethe's Weimar but was enriched with an additional radical aristocracy and a controlled aestheticism (Kostka, 1999, pp. 199-208, 210). In a letter to Van de Velde dated February 3, 1911, concerning the projected *Nietzsche Monument*, Kessler refers to his ideal architectural vision as "*architecture germano-classique*", a marriage between the Mediterranean, the Apollonian spirit, and the musical Dionysian *Stimmung* (Neumann, ed. 2015, p. 559).

Kessler's core idea centers around rhythm. In a revealing passage from 1901, he writes, "*Rhythm is order in the succession of feelings. Harmony is the selection of the feelings that evoke it, so that the mixture of the feelings that evoke it becomes a clear, total feeling (klares Gesamtgefühl). In both cases, the goal is the same: the clarity of the process of feeling (die Klarheit des Gefühlsprozesses)*" (Kostka, 1999, pp. 208, 212, 227, n. 42). According to Kessler, rhythm is a "gymnastics of feeling", of "sensuality" (Kostka, 1999, pp. 208, 212). I argue that Velde, in adopting this Kesslerian approach, understood himself primarily as an *architect of the soul* (Kostka, 1999, p. 207), i.e., as the organizer and regulator of an orderly and ordered sequence of sensory and material impressions in space and place. These sensory impressions have as their central recipient the human body as an organic, moving whole. In the poetic book *Amo* (a hymn to the value of combining love and faith in matters of architecture and design), Velde stresses how "*the full beauty of the human body is revealed in its movement*", in a defined rhythm (Van de Velde, 1909 / 1915). It is clear how the mature Velde has fully internalized the lessons of Kessler's ideas but also the specific Nietzschean sensibility towards physiology, physicality, and strength. Architecture is thus a narrative organization of spatial sequences of *Stimmungen*.

THE THIRD NIETZSCHEAN SPATIAL CONCEPT: THE INTOXICATION OF THE DECORATIVE LINE AS A DIONYSIAN GESTURE OF POWER

Velde's more general theoretical aim was to publish a study entitled *De la Ligne et de l'Ornement Structo-Dynamique* ("On Line and the Structural-Dynamic Dialogue") (Ploegaerts, 1999, p. 253, n. 14). The twenty-nine (29!) different versions and variations of manuscripts and unfinished typescripts on this subject span several decades (from 1900 to about 1935) (Schmückle von Minckwitz, 2003-2004, pp. 7, 9-10, 13, 46-55).

In the late manuscript / typescript 1119 (written in 1933–1936) and in manuscript 1269, Velde limits his field of research to the evolution of 'linear decoration' (*ornement linéaire*), which has ontological, existential, and historical primacy over "geometric" (Semper), "naturalistic" or "technical decoration" (Van de Velde, 1998, pp. 235-236). In the former, the line is revealed as a "*natural elemental force*". In contrast to this priority of the intrinsic impulse founded on a spontaneity of abstraction, Velde considers naturalistic reproduction, technical production, and geometric reduction to a system to be late, secondary phenomena (Schmückle von Minckwitz, 2003-2004, pp. 17-21).

The initial starting point of the "line drive" (what Velde calls, otherwise, *ivresse de la ligne*, line intoxication) is the observation of the movement of living organisms and an inherent human disposition for a play with technique. The joy of the game, its non-utilitarianism, leaves a trace, due to the gesture of the body, in the place of its registration. The magic (*ennivrement*) of the imprint of this force is organically linked to the evocative and suggestive surface (*surface suggestive*) of the place of its reception. The degree of stimulation is absolutely related to the movement: the immediate, the living, and the sensual (*immédiat, vivant, sensuel*) (Van de Velde, 1998, pp. 238-243). Combining in complex and ambiguous ways the psychological and ethnographic theories of Wundt, Karl Groos, and Ribot, Velde establishes this game (jeu) in the imagination as a biological necessity (Van de Velde, 1998, pp. 274, 276). Nietzsche would say: *physiology*. From the latter and Theodore Lipps, he grafted his theory with vitalist motifs: the element of decoration gives life, gives birth to the realm of *Raumlebens*, the "life of space". Lipps had almost grasped the concept of 'pure linear decoration', the structural decoration that animates surfaces (Schmückle von Minckwitz, 2003-2004, pp. 23-26, 43 n. 34).

The line itself, as the source of this type of decoration, is the material expression of a primary movement of the organic body: pure sensation, sensuality (*sensualité*), without cognition. The line must follow life; it must be kinetic, fleeting, momentary, and transient. The designer-creator must participate in the "drama of the line" (*drame de la ligne*) by following his free impulse (Van de Velde, 1998, p. 279). Velde's Nietzschean Heracliticism desires gestures that are free, varied, and instinctive (Van de Velde, 1998, pp. 243-249). The line is rooted in sensation, not cognition, as is already demonstrated by Paleolithic art. Prehistoric man invented decoration spontaneously, wishing to give life to inorganic, inanimate materials: the line replaces and symbolizes movement and force (Schmückle von Minckwitz, 2003-2004, pp. 26-27, 28-29, 31, 34). Behold the vitalistic conceptual marker, the anthropocentric motif: the line resembles the laryngeal cry, the voice. Velde writes: "*The first engraved lines from the hand of man are the traces of the surplus of his vitality*" (Schmückle von Minckwitz, 2003-2004, p. 33, my translation).

The line is a gesture with "Dionysian origins". The Nietzschean motif here is evident. According to Velde, the first decorations, the Dionysian, freeze the instability and elusiveness of the dance. The dancer "takes space" through body gestures. The line does the same: it acquires, conquers, and occupies the surface of inscription (Schmückle von Minckwitz, 2003-2004, pp. 34-35). The basic premise of a "dynamo-structural" decoration is a capacity for manifestation or exuberance (*exubérence*), robustness, combined with vigor (*vigueur*), and passion—what Velde calls the "Dionysian virtues" (Van de Velde, 1998, pp. 271-277). I would venture to argue that, for Velde, decoration is a frozen dance. A dance of intoxication. The conceptual movement of his thought is initiated by force and vital energy, transformed into a gesture (movement) of the body, and this, in turn, crystallizes into a trace (line). I argue that force as a vitalistic principle in Velde's decorative theory has a double meaning: physical (biological) robustness and the power of imagination. Therefore, in Velde's third Nietzschean spatial concept, power is somehow equated with ornament as a vitalistic principle—a vitalistic struggle for human expression. The line is the realization of a gesture of power (Zurstrassen, 2014, pp. 4-6, 11-16). It is action. The body, as gestural writing in space, anchors the decoration in place, recalling the Nietzschean association of power with a specific locality. Force, place, and line become one. Velde solves once and for all the misunderstandings that accompany the decoration. Decorum is not a superficial decoration; it is something much deeper and more dynamic: it is an inner, structural, organic force, a vibration of matter, an echo.

CONCLUSIONS

The deep structure of the conceptual markers that permeate Velde's thought is the sensationalism / intellectualism dichotomy. The second concept refers to an abstract process where the mind is dominant. This is valued negatively by Velde. In contrast, the first polemical marker we propose is related to an empathic identification with matter and power and is considered a positive indication. Here, the body dominates. It is a kind of Nietzschean naturalism. Velde's vitalist worldview of design is completely different from the dominant, mathematical, normative, rational, functionalist ideology of the Modern Movement. In most of Velde's works, the continuity of the lines of the interior space, create an environment, a single atmosphere, a coherent *Umwelt*, a Lebenswelt-reception for the human body.

At the *Folkwang Museum*, Velde, in collaboration with art historian Julius Meier-Graefe, will attempt an emotional, empathetic experience of merging painting, applied arts and architecture into a coordinated, well-tuned whole, a Wagnerian *Gesamtkunstwerk*, a fluid, hybrid, private/public environment, through pulsating rhythms of mosaics, coloured glass, light. The design of the museum is a conscious attempt to apply the Nietzschean idea of *Lebenskunst* to the architectural space. Meier-Graffe called this process of application, *Raumkunst*: it is an understanding of space as a psychological (I would say pedagogical) environment, an envelope that generates a *Raumsinn*, a spatial sense that triggers emotional vibrations in the subject's body as it moves through it (Kuenzli, 2013, pp. 503-516).

Revisiting my initial research hypothesis, I claim that the *Nietzsche Archive* embodies most of the principles of Velde's theory of decoration in all its three Nietzschean spatial concepts: the continuity and economy of the rhythm of forces, the importance of the shape of the void (positive and negative forms), the understanding of decoration as an organism, the reduction of the line to a physical gesture, and a current of energy. The *Nietzsche Archive* is full of challenges and responses: every single object, every piece of furniture, and every corner has been designed in an attempt to 'put a stamp on us', creating hollow sites of appropriation and niches of bodily empathy. Velde works with a dialectic of the empty and the full, the negative and the positive, the trace of the body's movement, and the imprint of immobilized matter. The figure targeted by Velde's design empathy is Nietzsche. Something more: the outline of his life Better still: his somatic existence.

Ole W. Fischer argues that Velde treated the villa as a reliquary, a saint's altar, a holy temple, or a shrine. Better: as a *Schatzkammer* (treasure room), especially in the place of the library and private living room. Fischer writes: "*Velde directed a mood, an atmosphere (mood) of authenticity...a retroactive studiolo*" (Fischer, 2006, pp. 43, 45). Fischer considers how this atmosphere of a potential Nietzschean studiolo is achieved design-wise through the notion of a 'decorative transcription', which Velde supposedly borrows from the late-Romantic music theory of Wagner and Franz Liszt's programmatic art (Fischer, 2006, p. 44).

I would like to attempt some conceptual extension of Fischer's interpretation of the *Nietzsche Archive* as a studiolo. Velde introduces us to an interaction between life and death through the organization of architectural space. He promises an immediacy of contact with the philosopher, an almost tactile relationship with his place of life and work, when we know how this relationship is unattainable. It ignites an uncanny intimacy. It feels like visiting Nietzsche in his place, only that the philosopher, unfortunately, is absent. This tension between expectation and experience is organized architecturally as a ritualistic sequence of places, like an initiation: a visitation pilgrimage to something precious and unique, gradually revealed. The *Nietzsche Archive* is a matrix for the habitation of thought. The dream space of Nietzsche's soul was transformed into a material place of life for the body. The visitor-walker, however, has to go through the reverse process. Through the lines of force of the furniture and spaces, their observation, and a gradual abstraction, he is led to a leap of faith: the insight of Nietzschean thought as a bodily gesture.

Autobiography as a place. The *Nietzsche Archive* is *Ecce Homo* transformed, reconfigured, and organized in an architectural space. It is like inhabiting the bodily space of Nietzsche himself. Or, rather, the negative of his bodily space, as would actually happen if you met him in person: the void as a receptacle of actions, as the philosopher himself would act if he lived with you in the same place. Velde writes in his autobiography,

referring to the period when he was designing the *Nietzsche Archive*: "*During the weeks that I devoted to the realization of the plans for this transformation, I was able to touch with my fingers the work of Nietzsche, with which my spirit had been imbued since reading the first aphorism, the first verse of Also Sprach Zarathustra. I was able to take in my hands the manuscripts, the folders full of notes made by Nietzsche in the mountains: I was able to turn the pages of the books he had read, which he had covered with footnotes in the margin. I was able to read the manuscript of Ecce Homo, which Elizabeth had wrested from the hands of his mother, who wanted to consign it to the flames*" (Van Loo, ed. 1995, 155, my translation).

It would be worth noting Velde's emphasis on tactile, personal, and physical contact with the philosopher's residual manuscripts—a not coincidental, I believe, obsession with touch. Especially with the concept of hands and bodily gestures. It is as if he seeks legitimacy for his compositional idea in the transmission of a personal gift from Nietzsche through manual mediation. This quotation is crucial. Not only does it reveal Velde's familiarity with Nietzsche's thought, the literary-textual starting point of his design, but above all, it confirms the hermeneutical proposition I put forward above: the influence of *Ecce Homo* on the organization of the *Nietzsche Archive* as a constructed autobiographical site.

Concluding my overall argument, it seems that the common element of Kessler and Velde is the attempt to move out of Romanticism into Vitalism, into a new faith in life, through the realization and transmutation of the real, organic place of action and body, as encoded in Nietzsche's thought, into a focused architectural narrative, an environment of unique and unrepeatable experiences.

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THE PHYSICAL-VIRTUAL NEXUS: LEARNING THROUGH INTERACTION

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ABSTRACT

The rapid integration of digitalization into education has exposed a significant gap in educational architecture. Traditional classrooms, designed for one-way instruction and passive knowledge reception, fundamentally fail to support the dynamic, collaborative, and discovery-based learning that 21st-century pedagogy demands. This paper proposes a new architectural paradigm to address this gap, inspired by the engaging and interactive principles of children's museums and science centers.

Moving beyond simply adding technology to existing classrooms, this research conceptualizes a 'Learning Landscape' as a 'Physical-Virtual Nexus', an architectural framework composed of flexible, interconnected zones that blend physical and digital realms to foster active discovery. Structured around the core pedagogical principle of 'Learning Through Interaction', this framework aims to cultivate essential 21st-century skills (the 4Cs: Creativity, Critical Thinking, Collaboration, and Communication) by positioning the environment itself as an active participant, or 'Third Teacher'.

The methodological approach combines qualitative analysis of innovative educational spaces with a synthesis of contemporary pedagogical and architectural theory. Through case study examination of environments like Norway's Future Learning Lab and Singapore's Playscape initiative, this research identifies specific patterns such as flexible zoning and immersive technology integration for creating engaging educational experiences. These insights are integrated with principles from constructivist learning theory and the concept of the environment as the 'Third Teacher' to develop a comprehensive architectural framework.

This framework is built upon three core, interdependent design principles: Spatial Fluidity (reconfigurable areas that support rapid transitions between different learning modes), Integrated Technology (seamlessly embedding digital tools as invisible enablers of exploration), and Multi-Sensory Engagement (designing spaces that stimulate curiosity through deliberate use of light, sound, texture, and tactile elements). These principles directly support 4C development: fluid spaces facilitate Collaboration; integrated tools foster Creativity and Critical Thinking through data analysis and problem-solving; while multi-sensory design enhances Communication through rich, expressive mediums.

The proposed 'Learning Landscape' transforms schools from places of passive reception into adaptable ecosystems for active knowledge construction. By prioritizing interaction at every level, this model addresses critical challenges in contemporary education. It promotes educational equity by creating more inclusive environments that accommodate diverse learning styles and needs, establishing the environment as an active agent in the learning process.

This research contributes to the evolving discourse on educational architecture by providing a practical framework for designing learning environments that truly support 21st-century competencies. The proposed model has significant implications for architects, educators, and policymakers seeking to create future-ready educational spaces that bridge the physical-digital divide.

KEYWORDS: Learning Through Interaction, Educational Architecture, Hybrid Learning, Physical-Virtual Nexus, 21st-Century Pedagogy

1. INTRODUCTION

The twenty-first century has witnessed an unprecedented transformation in the global education landscape, driven by rapid technological advancements, socioeconomic shifts, and emerging global crises. This era, often characterized as the Fourth Industrial Revolution (Industry 4.0), has necessitated a parallel evolution in educational paradigms, referred to as Education 4.0, shifting the focus from the mere accumulation of knowledge to the acquisition of transformative competencies (Erdoğan Coşkun, 2022). As societies transition from industry-based economies to knowledge-based economies, the primary objective of education has expanded to equip individuals with high-level cognitive skills such as critical thinking, social responsibility, and global awareness, as emphasized by UNESCO (2015). Consequently, contemporary pedagogy has moved away from behaviorist, teacher-centered models toward constructivist, learner-centered approaches that prioritize inquiry, adaptability, and active knowledge construction (Özdoğru, 2022).

Despite these profound pedagogical shifts, the physical environments in which education takes place have largely remained stagnant. Traditional classroom designs, characterized by rows of desks facing a single instructor, were conceived to serve the needs of the industrial age, prioritizing standardization, discipline, and one-way instruction over interaction and creativity (Erdoğan Coşkun, 2022). Historically, this architectural typology mirrors the "factory model" of the early 20th century, designed to produce a standardized workforce through a Taylorist approach to spatial organization. However, the demands of the 21st century require a fundamental restructuring of learning spaces to foster essential competencies known as the "4Cs": Creativity, Critical Thinking, Collaboration, and Communication (Trilling & Fadel, 2009). The rapid integration of digitalization into education has further exacerbated this disconnect, exposing a significant gap between evolving pedagogical theories and the obsolete architectural configurations of schools.

While hybrid and smart learning environments have been widely explored (Trilling & Fadel, 2009; Sockalingam et al., 2025), there is still no architectural framework that systematically integrates spatial fluidity, digital layering, and multisensory engagement. This paper addresses this gap by proposing the Physical-Virtual Nexus.

In response to this gap in the literature, this study is guided by the following research questions:

How can architectural design integrate physical and digital affordances to support 21st-century competencies?

What spatial patterns emerge from innovative learning environments that exemplify hybrid learning?

How can these patterns be synthesized into a coherent architectural framework?

This paper posits that simply inserting digital tools into outdated spatial configurations is insufficient to meet the complex needs of modern learners. Instead, a holistic reimagining of the educational environment is required, one that transcends the limitations of traditional "brick-and-mortar" constraints. Drawing on the concept of "Cyber-Physical Learning," which envisions a seamless integration of remote and physical interactions (Sockalingam et al., 2025), we argue for a new architectural paradigm: the "Physical-Virtual Nexus." This concept envisions the learning space not as a static container for instruction, but as a dynamic "Learning Landscape" that blends physical affordances with virtual layers to create an adaptive ecosystem.

Inspired by the engaging and interactive principles found in informal learning environments such as children's museums and science centers, this research explores how educational architecture can transition from a passive backdrop to an active participant in the learning process. By examining the intersection of spatial design and digital technology, this paper aims to propose a framework where the environment itself acts as a "Third Teacher" (Amann, 2022), fostering inquiry-based learning through interaction and bridging the divide between the physical and digital realms. While hybrid spaces have been discussed in prior research, this study advances the field by conceptualizing the Physical–Virtual Nexus as a distinct spatial typology that demands a new architectural grammar.

The main contribution of this study is a new architectural model, Learning Landscape, grounded in both pedagogical theory and spatial analysis. The remainder of this paper is structured as follows. Section 2 establishes the theoretical framework, discussing the environment as the 'Third Teacher' and Constructivist learning theory. Section 3 outlines the qualitative case study methodology. Section 4 presents the analysis of the selected innovative learning environments. Section 5 synthesizes these findings into the proposed 'Learning Landscape' framework, detailing its three core principles. Finally, Section 6 discusses the implications, acknowledges limitations, and suggests directions for future research.

This paper proceeds as follows. Following the theoretical framework that positions the environment as a pedagogical agent, the methodology outlines the case study selection and analytical approach. Subsequently, three architectural typologies are examined to derive the proposed Learning Landscape framework, and the paper concludes with implications for future educational design.

2. THEORETICAL FRAMEWORK

To substantiate the concept of the "Physical-Virtual Nexus," this research establishes a dialogue between architectural theory and educational psychology. The framework is built upon two primary theoretical pillars: the Reggio Emilia approach regarding the environment as the "Third Teacher" and Constructivist Learning Theory. Together, these theories provide the rationale for transforming learning spaces from passive containers into active, responsive ecosystems.

2.1. The Environment as the Third Teacher

Originating from the Reggio Emilia philosophy of early childhood education, the concept of the environment as the "Third Teacher", following parents and classroom educators, is central to this study. In this view, physical space is never neutral; it is an active agent that can either inhibit or facilitate learning. A well-designed environment functions as a "reactive element," actively influencing users' perceptions and inviting curiosity, exploration, and social interaction (Amann, 2022).

In the context of the 21st century, this theory must be expanded to include the digital dimension. As education transitions toward Cyber-Physical Learning, the definition of the “Third Teacher” is no longer limited to spatial arrangement or material affordances; it now encompasses digital interfaces, playful learning systems, VR-enhanced environments, and interactive multimodal surfaces that co-produce learning experiences. Recent research on digital playful learning demonstrates that digital layers can stimulate exploration, collaboration, and meaning-making in ways consistent with Reggio Emilia’s interpretive pedagogy. (Parmaxi & Zaphiris, 2020)

Cyber-Physical Learning (CPL) in this context refers to a pedagogical condition in which learners continuously navigate between physical actions and digital feedback loops, generating hybrid interactions that foster inquiry, reflection, and design-based learning. Thus, architectural design must be responsive, capable of supporting seamless transitions between physical manipulation and digital investigation as learners move across interconnected layers of experience (Sockalingam et al., 2025). In this framework, the goal of CPL extends beyond mere connectivity to creating 'learning intimacy,' ensuring that remote students feel as socially present and engaged as their physical counterparts.

Recent architectural frameworks, particularly the DTALE (Designing Teaching and Learning Environments) model, have operationalized this integration. The DTALE framework positions learning design at the center, with four interactive components: physical and digital spaces, technology, organization, and context. Importantly, the DTALE model empirically validates that effective learning environments require concurrent consideration of these elements, moving beyond treating digital technology as a peripheral resource. The Physical-Virtual Nexus expands this framework by specifically emphasizing the aesthetic and experiential dimensions of spatial fluidity and multi-sensory engagement, offering architectural specificity

to DTALE's broader pedagogical model. The DTALE model provides a valuable pedagogical foundation for integrating various elements of learning environments. Our proposed 'Physical-Virtual Nexus' builds upon this by offering a specifically architectural and experiential grammar, focusing on the spatial manifestation of DTALE's components, particularly through the principles of Spatial Fluidity and Multi-Sensory Engagement.

Cyber-Physical Learning (CPL) represents a comprehensive pedagogical ecosystem where learners navigate continuously between physical actions and digital feedback loops through integrated technology infrastructure. CPL encompasses not merely synchronous interaction, but also AI-driven personalized learning pathways, real-time learning analytics, and embodied interactions through telepresence robotics and immersive technologies. This architecture fundamentally transforms the role of space from a static container into a responsive infrastructure that mediates between cyber and physical affordances.

2.2. Constructivism and 21st Century Skills

The pedagogical engine of the Physical–Virtual Nexus is Constructivism, which posits that knowledge is not passively received but actively constructed by learners through their experiences and interactions (Piaget, 1952; Vygotsky, 1978). This theory aligns with the development of essential 21st-century competencies**:** Creativity, Critical Thinking, Collaboration, and Communication (Trilling & Fadel, 2009). Collaboration is fostered by spatial configurations that break down hierarchies and allow for group work, consistent with Vygotsky's sociocultural emphasis on learning as a social activity. Communication is enhanced by environments that offer multiple modes of expression, visual, digital, spatial, and verbal, reflecting the multimodal character of contemporary learning (Özdoğru, 2022).

Critical Thinking and Creativity emerge in "open-ended" environments where learners confront problems to be solved rather than predefined answers. Digital tools, including interactive simulations and VR visualizations, enable learners to manipulate complex abstractions, thereby bridging theoretical reasoning and material practice (Alrmuny & Ku, 2025). The Physical–Virtual Nexus operationalizes constructivist theory by enabling learners to experiment, iterate, prototype, and reflect through an interplay of tangible materials and digital simulations, actively constructing knowledge across hybrid contexts.

This pedagogical shift reflects a broader paradigm transformation in 21st-century educational theory. With the emergence of Information and Communication Technology (ICT), education has transitioned from positivist, behaviorist models toward constructivist approaches since the 1970s, culminating in Education 4.0, a framework emphasizing digital literacy, innovation, and critical-analytical thinking as core competencies. Within this context, spatial design must actively operationalize these competencies rather than passively contain them.

3. METHODOLOGY

This study adopts a qualitative, exploratory research design utilizing a multiple case study method to investigate the operational dynamics of the "Physical-Virtual Nexus" in contemporary educational architecture. This methodological approach facilitates an in-depth examination of how spatial affordances interact with pedagogical practices across diverse contexts. To capture the broad spectrum of this architectural phenomenon, a maximum variation sampling strategy was employed. The selection rationale focuses on identifying environments that range from high-tech digital integration to sensory-grounded physical engagement, thereby providing a holistic view of the proposed framework.

Accordingly, the selected cases are categorized into three primary typologies that represent distinct manifestations of the nexus. The first category, Media-Rich Environments, focuses on digital production and global connectivity, exemplified by Norway's Future Learning Lab and the SUTD campusX initiative. The second category, Fluid Learning Landscapes, examines architectural flexibility and the dissolution of

traditional boundaries through the cases of Vittra Schools (e.g., Telefonplan and Brotorp) and Ørestad Gymnasium. The third category, Biophilic-Interactive Environments, addresses sensory engagement and nature integration, as demonstrated by Singapore's Playscape.

Data collection involved a triangulation of diverse sources to ensure validity, including architectural plans and sections, published academic articles, technical reports, educational policy documents, and relevant literature. To ensure a systematic spatial evaluation of these data sources, the study applies the Mirregan-Todorov Method for Architectural Criticism, aligned with Amann's (2022) classification of educational spaces into interactive systems of topology, function, and material. For instance, in the Vittra School case, the topological analysis focused on the absence of corridors and the presence of 'spatial loops'; the functional analysis examined how 'cave' and 'mountain' spaces support different learning modes; and the material-affordance analysis assessed the tactile qualities of the materials used in these structures.

This analytical framework was executed in three distinct stages: first, a topological analysis was conducted to examine spatial hierarchy, dimensions, and connectivity to determine flexibility; second, a functional analysis evaluated usage patterns and the adaptability of spaces for diverse learning modes; and finally, a material-affordance analysis assessed the sensory qualities and the integration of technological interfaces as stimuli for learning.

4. CASE STUDIES: LEARNING FROM INNOVATIVE ENVIRONMENTS

To investigate the operational dynamics of the Physical-Virtual Nexus, this section analyzes three distinct architectural typologies: media-rich environments that bridge cyber-physical gaps, fluid learning landscapes that dissolve spatial boundaries, and biophilic environments that ground digital learning in sensory experience.

4.1. Norway's Future Learning Lab & SUTD campusX: The Cyber-Physical Interface

This category examines environments where the "digitalization of society" is spatially manifested through media-rich systems. Norway's Future Learning Lab at the University of Agder challenges the traditional lecture-hall format by reimagining the computer lab as an "explorative process" for co-creative entrepreneurship. Architecturally, the space offers rapidly reconfigurable zones where ubiquitous technology acts as a "Knowledge Cloud," allowing students to engage with global media flows while grounded in a collaborative local space. Research confirms that this integration of digital tools with flexible furniture significantly enhances student interaction.

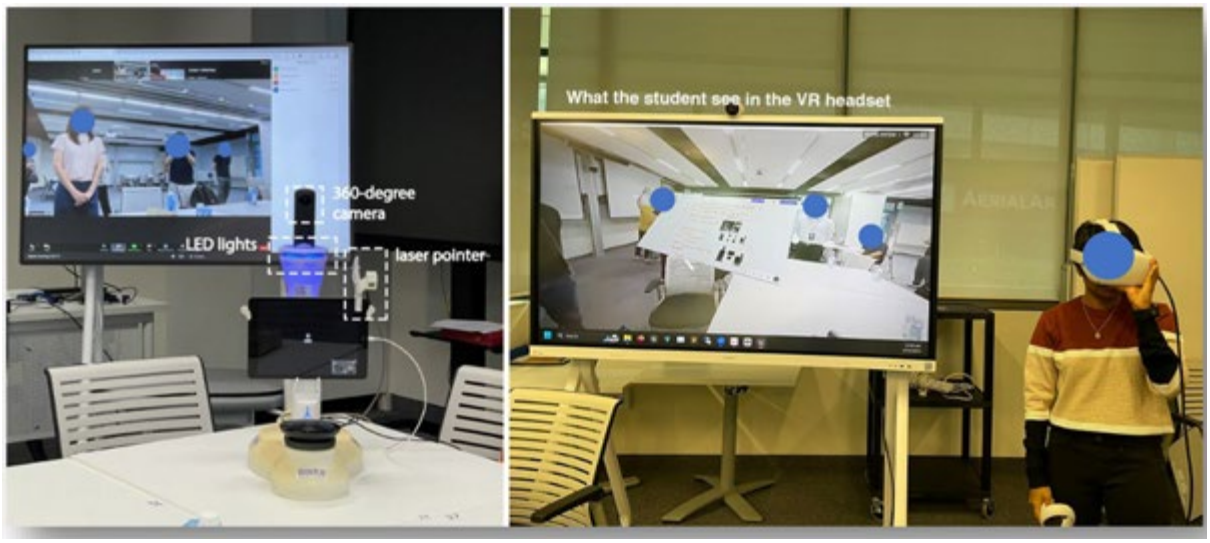

Figure 1. The Cyber-Physical Interface in Practice. Telepresence Learning System (Left); Integrated with Virtual Reality Affordance (Right) (Source: Sockalingam, N., Lo, K., Teo, J. et al. , 2025).

Complementing this approach, the SUTD campusX initiative in Singapore advances the concept of "Cyber-Physical Learning" (CPL). Unlike traditional spaces, campusX utilizes telepresence robotics and AI analytics to merge remote and physical students synchronously (Sockalingam et al., 2025). Specifically, these robots employ 360-degree cameras to provide immersive views for remote learners and use LED signaling lights to visually alert instructors to their queries, thereby fostering 'learning intimacy' and maintaining social connectedness across physical and digital divides. This creates a seamless ecosystem where digital tools are intrinsic elements of the spatial fabric rather than add-ons. (see Figure 1) Together, these cases operationalize a shift from "knowledge transmission" to "knowledge creation," where the architecture supports personalized learning pathways and fosters essential skills like digital literacy and global collaboration.

4.2. Vittra School & Ørestad Gymnasium: The Fluid Learning Landscape

This model represents the principle of "Spatial Fluidity," where physical boundaries are dissolved to create non-linear learning narratives. Vittra Schools (e.g., Telefonplan) in Sweden represent a radical departure from conventional classroom teaching. Instead of rows of desks, the interior design relies on five pedagogical principles: "the watering hole," "the show-off," "the cave," "the campfire," and "the laboratory" (UrbanNext, 2018). As visualized in Figure 3, structures like the "Giant Iceberg" serve as platforms for relaxation and interaction, effectively acting as educational tools themselves. (see Figure 2) Empirical studies indicate a positive correlation between such spatial adaptability and sustained student engagement.

Figure 2. Spatial Fluidity in Practice. The open learning landscape of Vittra School Telefonplan features the 'Giant Iceberg,' a multifunctional structure containing a cinema and relaxation zones, replacing traditional desk setups to facilitate differentiated learning (Source: Rosan Bosch Studio; UrbanNext, 2018).

Similarly, Ørestad Gymnasium in Denmark utilizes a "vertical campus" approach where a central "learning stair" connects open zones, promoting an "osmosis" of ideas between disciplines. By utilizing transparent sightlines and flexible breakout areas, the architecture enforces a culture of visible, communal collaboration as advocated by Nair (2014). These environments physically manifest Vygotsky's sociocultural theory and Kolb's Experiential Learning Theory, granting students "learner agency" to choose the setting that best suits their immediate task, whether it be solitary reflection or group collaboration.

4.3. Singapore's Playscape: Biophilic and Interactive Play

While the previous examples focus on digital and spatial flexibility, Singapore's Playscape initiative addresses the critical need for "Multi-Sensory Engagement." Developed by the Design Incubation Centre, this project reimagines the playground as a "learning landscape" that creates a "biotope," integrating elements like sun, rain, and wind with interactive structures. (see Figure 3)

Figure 3. The Playscape / waa, China. Representative example of a multi-sensory learning environment. Similar to the Singapore Playscape concept, this image illustrates the integration of natural elements like sunlight, textures, and open-ended play to foster embodied cognition (Image for illustrative purposes, Source: ArchDaily, 2021)

This design rejects the dichotomy between technology and nature, encouraging children to manipulate their environment physically. Pedagogically, Playscape validates the argument that a learning environment must be immersive to function as a "Third Teacher." Blending physical activity with cognitive challenges fosters inquiry-based learning through direct sensory feedback. Crucially, this case serves as a counterbalance within the Physical-Virtual Nexus framework, ensuring that digital immersion is grounded in somatic experience and does not lead to physical detachment.

5. PROPOSED FRAMEWORK: THE LEARNING LANDSCAPE

Synthesizing the theoretical foundations of Constructivism and the "Third Teacher," along with insights from the analyzed case studies, this paper proposes a comprehensive architectural framework: the "Learning Landscape." This framework is defined as a Physical-Virtual Nexus, an ecosystem where the digital and physical are not merely adjacent but interwoven to support 21st-century competencies. The framework operates on three core, interdependent design principles derived from the typological analysis: Spatial Fluidity, Integrated Technology, and Multi-Sensory Engagement. As synthesized in Table 1 below, each design principle acts as the spatial manifestation of a core educational theory, detailing specific features and their pedagogical impacts.

Design Principle	Key Spatial Features	Pedagogical Affordances
Spatial Fluidity	Reconfigurable partitions, modular furniture, active corridors, "cave" & "agora" zones.	Facilitates rapid transitions between individual reflection ('cave') and collaborative work ('agora'), empowering student choice and self-regulation.
Integrated Technology	Ubiquitous Wi-Fi, sensor-embedded surfaces, AR overlays, telepresence robotics, smart glass.	Enables synchronous cyber-physical interaction; facilitates personalized and adaptive learning pathways.

Multi-Sensory Engagement	Biophilic elements, circadian lighting, acoustic zoning, tactile interfaces, and interactive play structures.	Enhances embodied cognition; grounds digital experiences in physical reality; stimulates curiosity.

Table 1. Conceptual Framework of the Learning Landscape: Principles, Features, and Theoretical Basis.

As detailed in Table 1, each design principle acts as the spatial manifestation of a core educational theory. Spatial Fluidity operationalizes Sociocultural Theory (Vygotsky, 1978) by providing reconfigurable zones that facilitate the social interaction and peer scaffolding necessary for active knowledge construction. Integrated Technology draws upon the framework of Cyber-Physical Learning (Sockalingam et al., 2025), creating a seamless infrastructure where digital tools support personalized and adaptive learning pathways rather than dictating them. Finally, Multi-Sensory Engagement embodies the Reggio Emilia philosophy of the "Third Teacher" and Experiential Learning (Kolb, 1984), ensuring that the physical environment actively stimulates embodied cognition and curiosity through high-fidelity sensory experiences.

These three principles are not arbitrary design tactics but direct operationalizations of distinct pedagogical theories. Spatial Fluidity operationalizes Vygotsky's sociocultural theory by providing zones that facilitate peer scaffolding. Integrated Technology embodies the DTALE framework's call for concurrent consideration of technology, space, organization, and context. Multi-Sensory Engagement reflects both the Reggio Emilia tradition and contemporary neuroscience, which demonstrates that embodied cognition, the integration of sensory, motor, and cognitive processes, enhances memory retention and transfer. This synergy ensures that architectural design does not merely accommodate pedagogy but actively constructs the conditions for learning.

5.1. Spatial Fluidity: The Architecture of Adaptability

As evidenced by the Vittra School and Ørestad Gymnasium cases, static architecture inhibits dynamic learning. The first principle, Spatial Fluidity, refers to the capacity of the architectural environment to physically adapt to changing pedagogical needs in real-time.

Reconfigurable Zones: The Learning Landscape rejects fixed partitions in favor of movable walls (such as sliding rail systems), modular furniture (including wheeled tables and stackable seating), and open plans. This allows spaces to transition instantaneously from intimate "cave" spaces for individual reflection to expansive "agora" spaces for collaboration. This approach resonates with Bernard Tschumi's concept of "event-space," which posits that architecture is defined not merely by static form but by the dynamic events and movements it hosts. Unlike the rigid functionalism of the past, the Learning Landscape embraces this fluidity, allowing the "event" of learning to reshape the space continuously.

Transitional Activation: The design prioritizes "in-between" spaces, corridors, and lobbies, transforming them into active learning nodes. These fluid boundaries encourage the cross-pollination of ideas, translating the non-linear nature of digital hypertext into the physical realm.

5.2. Integrated Technology: The Invisible Infrastructure

Drawing from the SUTD campusX model, this principle argues for technology as an invisible enabler rather than a focal object. In the Physical-Virtual Nexus, technology dissolves into the architectural fabric.

Seamless Embedding: Digital tools are embedded into the architecture itself. For instance, sensor-embedded surfaces collect interaction data to inform pedagogical reflection, while smart glass transitions instantly from a transparent partition to a collaborative digital canvas. This creates an environment of "ubiquitous computing" where access to information is as natural and omnipresent as access to light.

Augmented Reality (AR) Layers: The framework proposes using AR to reveal layers of information within the physical space. By allowing students to "read" the building's systems or overlay digital projects onto physical models, the facility itself becomes a learning artifact, directly supporting critical thinking and data analysis skills. Furthermore, virtual laboratories can simulate complex or hazardous experiments, such as titration in chemistry, offering a safe, adaptive environment where students can practice repeatedly without the constraints of physical resources (Agbonifo et al., 2020).

5.3. Multi-Sensory Engagement: Grounding the Digital

Inspired by the Singapore Playscape initiative, this principle posits that deep learning is somatic and embodied. In a digital age, the physical environment must provide high-fidelity sensory experiences that screens cannot replicate.

Atmospheric Design: The deliberate use of circadian-responsive lighting, acoustic zoning, and tactile textures creates an immersive atmosphere that regulates learner engagement and well-being.

Tactile-Digital Interface: The framework encourages interfaces that require physical manipulation, touch, gesture, and movement to control digital outcomes. This fosters creativity by engaging the whole body in the act of learning, moving beyond the passive "brain-on-a-stick" model of traditional education.

The synergy between these principles is visualized in Figure 4, where their overlap creates specific affordances: Adaptability (where space meets fluidity), Digital Immersion (where technology meets engagement), and Embodied Experience (where sensory inputs ground digital interactions). This holistic integration addresses the limitations of traditional models by ensuring that technological, spatial, and sensory inputs function in concert. Consequently, the architecture transitions from a passive container into a responsive "Third Teacher," setting the stage for the broader implications discussed in the following section.

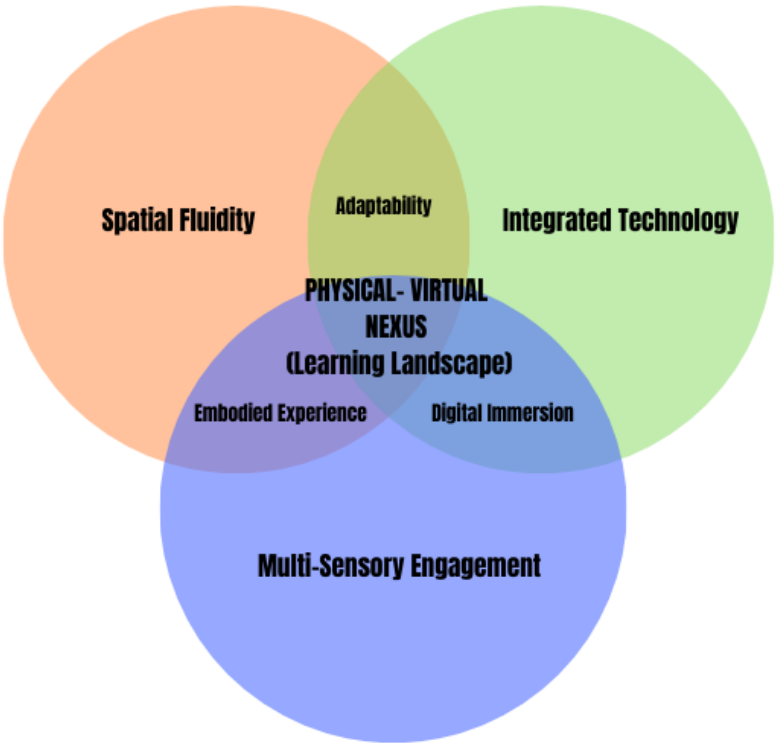

Figure 4. The Physical-Virtual Nexus Model. The intersection of Spatial Fluidity, Integrated Technology, and Multi-Sensory Engagement creates the optimal "Learning Landscape" for 21st-century competencies.

6. DISCUSSION AND CONCLUSION

The transition from the traditional classroom to the “Learning Landscape” represents more than an architectural upgrade; it is a fundamental restructuring of the educational paradigm. By establishing a Physical–Virtual Nexus, schools transform from places of passive reception into adaptable ecosystems for active knowledge construction.

This research highlights that the integration of the digital does not render the physical obsolete; rather, it heightens the need for physical spaces that offer what the digital cannot: social intimacy, sensory richness, and serendipitous encounters. As demonstrated by the diverse typologies of Norway’s Future Learning Lab and Singapore’s Playscape, a responsive environment, acting as a “Third Teacher”, alleviates the burden on the instructor and empowers the student, promoting educational equity by accommodating diverse learning styles.

6.1. Implications for Future Practice

Implementing this framework requires a shift in both policy and design thinking. Architects must engage in continuous dialogue with educators to understand the “software” of learning (pedagogy) before designing the “hardware” of the school (architecture). This dialogue should be formalized through participatory design workshops where educators, architects, and students co-create spatial scenarios, ensuring the design genuinely serves curricular needs. Beyond design considerations, ministries and local authorities must acknowledge that hybrid spaces cannot succeed without parallel transformations in teacher training, curriculum flexibility, and assessment practices.

Moreover, longitudinal studies are needed to examine how multisensory, hybrid learning spaces influence student well-being, engagement, and academic performance across different socioeconomic contexts. Ultimately, the Physical–Virtual Nexus offers a strategic roadmap for creating future-ready educational environments that are as dynamic, interconnected, and complex as the world students will inherit.

Additionally, the pervasive integration of IoT sensors and AI systems within the Learning Landscape raises critical ethical concerns regarding data privacy and the potential emergence of a "surveillance culture." As educational environments become increasingly sentient, there is a distinct risk that continuous monitoring could inadvertently generate Foucauldian "panopticon" effects, shifting the spatial function from support to control. Beyond surveillance, there is the risk of social isolation; as noted by Çoban et al. (2022), immersive technologies might inadvertently detach students from peer interaction in the real world. Therefore, as Bağcı (2022) emphasizes, even in a digitalized era, the school must be preserved as an indispensable physical space for "collective living" and socialization. These dilemmas necessitate a critical stance, asking not just if we can integrate a technology, but whether we should, to ensure that human agency is preserved. For instance, the SUTD campusX initiative mitigates surveillance risks by using 'aggregated engagement scores' rather than storing raw video data, demonstrating a privacy-first approach to learning analytics. Consequently, schools must establish transparent data governance protocols and ensure algorithmic fairness, guaranteeing that AI-driven personalized pathways do not unknowingly amplify existing socioeconomic inequities.

6.2. Limitations

Although this study proposes a theoretically grounded architectural model, several limitations must be acknowledged to contextualize its findings. The analysis draws on a limited number of international case studies, which naturally constrains the generalizability of the conclusions and prevents broader cross-cultural validation. In addition, the research relies primarily on secondary sources, including architectural reports, institutional publications, and existing literature, without incorporating primary fieldwork, observational data, or user-centered evidence. This reliance limits the ability to capture lived experiences

within hybrid learning environments. The study also does not integrate architectural performance metrics such as environmental comfort, acoustics, spatial efficiency, or indoor air quality, all of which are essential for assessing the effectiveness of physical–digital integration in operational contexts. Finally, while global exemplars provide valuable insight, their transferability to the socioeconomic, policy, and infrastructural conditions of Türkiye remains inherently constrained; applying these models directly requires cautious contextual interpretation. These limitations do not diminish the conceptual contribution of the proposed framework but rather underscore the need for future empirical and context-sensitive research to substantiate, refine, and localize the Learning Landscape model.

6.3. Directions for Future Research

Future research should adopt more focused and empirically grounded approaches to deepen the architectural and pedagogical understanding of hybrid learning environments. One critical direction involves the use of sensor-based analytics, integrating IoT systems, indoor positioning data, and behavioral tracking, to generate real-time evidence on how learners navigate and engage with the interplay of physical and digital affordances. Complementing this, augmented-reality–based architectural prototyping offers an opportunity to test spatial configurations before construction, allowing architects and educators to collaboratively assess the functionality and adaptability of proposed environments. Cross-national comparative studies are also essential to uncover how hybrid learning architectures diverge across different socioeconomic contexts, particularly between developed and developing countries, where cost structures, policy landscapes, and digital equity challenges vary significantly. Moreover, future work should examine how teachers reinterpret pedagogy within hybrid systems and how continuous professional development shapes their behavioral adaptation. Finally, research is needed to illuminate the socioemotional dimensions of hybrid learning, exploring how multisensory and dynamic spaces shape students' sense of belonging, collaboration practices, and overall well-being, dimensions that remain largely absent from architecture-driven studies.

With these contributions, limitations, and future research pathways, this study positions the Learning Landscape framework as a foundational blueprint for reimagining educational environments that harmonize spatial flexibility, digital layering, and multisensory engagement within a coherent Physical–Virtual Nexus.

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AN ONTOLOGICAL FRAMEWORK FOR THE PRODUCTION OF XR-BASED DIGITAL SPACE

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ABSTRACT

This paper transcends classical understandings of space grounded in representational form by revisiting Gilles Deleuze's concepts of difference, becoming, and immanence alongside Luciana Parisi's account of speculative computation as a framework for the production of digital space within XR (extended reality) environments. It argues that the digital should not be understood as the visualization of predefined geometries but as a process of becoming in which difference is continuously generated. Within this perspective, code is treated not as an instrumental medium but as an ontological force, and space itself is reconceptualized as an unfolding sequence of topological events rather than the reproduction of preexisting representations.

The study investigates how contemporary computational and behaviour-based systems can enact this logic of differentiation in XR, reframing Deleuzian thought through Parisi's notions of computational folding and algorithmic indeterminacy. From this synthesis, the paper proposes a mode of digital spatial production grounded in immanent variation rather than fixed form—an approach that functions simultaneously as a technical methodology and an ontological–epistemological repositioning, situating XR space as a speculative environment in which conditions of difference are continuously constituted.

By developing this theoretical–analytical framework, the paper contributes to emerging discourses on XR-mediated spatiality and offers a foundation for understanding digital space as an interactive, dynamic, and continually differentiating field of experience.

Keywords: Extended Reality, Computational Design, Architectural Design, Representation

1. INTRODUCTION

Digital spatiality is undergoing a fundamental transformation as computation increasingly operates beyond representational paradigms. Rather than functioning as a means to depict or visualize pre-existing geometries, contemporary digital systems—particularly those enabled by extended reality (XR)—generate space as a real-time field of interactions, variations, and emergent intensities. This shift requires a rethinking of spatial ontology: from space as a fixed, representable form to space as an **ontogenetic process** produced through continuous computational differentiation.

Historically, computational design and architectural discourse have often relied on representational models in which digital environments serve as simulations or reconstructions of external physical realities. Yet the digital has never been confined to such representational functions. From nineteenth-century mechanical computation to contemporary XR systems, digital space has increasingly revealed itself as a **processual, relational, and speculative medium**. In this context, XR does not simply visualize a world; it **worlds**—it produces spatial conditions in real time through sensing, feedback, prediction, and algorithmic modulation.

This paper proposes an ontological framework for understanding XR-based digital space by drawing on Gilles Deleuze's philosophy of difference and Luciana Parisi's theory of speculative computation. We argue that XR spatiality emerges through processes of continuous differentiation rather than through representational fidelity, and that contemporary computational and behavior-based systems provide the operational conditions for such emergence. These systems resonate with the processual logic of XR by enabling spatial configurations to arise from distributed interactions, iterative variation, and recursive feedback, revealing digital space as an immanent field of ongoing transformation rather than the projection of predetermined form.

To establish this framework, the paper is organized into three interconnected sections. The first section outlines the techno-genealogy of digital space, tracing how computation has historically shifted from representational models toward processual, emergent, and real-time modes of spatial production that culminate in contemporary XR environments. The second section develops a non-representational ontology of XR spatial production by integrating Deleuzian concepts of difference, immanence, and multiplicity with Parisi's theory of speculative computation, thereby reframing digital space as an immanent field generated through continuous differentiation rather than the visualization of pre-existing form. The final section then transitions from theory to methodology, grounding these conceptual concerns in agent-based modeling; here, the paper examines how algorithmic agents, behavioral rules, and field-based modulations operationalize the proposed ontology, forming the basis for the analytical and experimental investigations that follow.

2. THE TECHNO-GENEALOGY OF XR-BASED DIGITAL SPACE: FROM MECHANICAL COMPUTATION TO REAL-TIME SPATIAL BECOMING

2.1. Mechanical Computation and the Birth of Informational Space

The origins of digital space lie not in attempts to reproduce the physical world but in efforts to replace representational logic with computational operation. Early mechanical automata, such as Charles Babbage's Difference Engine, calculated through iterated differences rather than symbolic depiction, marking the emergence of a computational paradigm grounded in **procedural rather than representational** thinking (Babbage, 1864). Ada Lovelace famously described the Analytical Engine as weaving "patterns," indicating that digitality from its inception concerned the production of **operative structures**, not images (Lovelace, 1843).

Alan Turing's universal machine radicalized this understanding by conceptualizing computation as a topology of state transitions rather than a geometry of forms (Turing, 1936). Claude Shannon further decoupled information from representation by defining it as the organization of uncertainty—an ontological emphasis on **difference**, variability, and probabilistic distribution (Shannon, 1948). Together,

these developments framed digital space as a field of dynamic potentials, prefiguring the real-time spatial formation seen in XR systems.

2.2. Cybernetic Systems, Emergence, and the Reconfiguration of Spatiality

Post-war cybernetics reconceived both subjects and environments as adaptive systems driven by feedback, behavior, and communication (Wiener, 1948). Rather than describing space as a static container, cybernetics reframed spatiality as a processual field, continually reorganized through recursive interactions among heterogeneous agents. Within this epistemic shift, computation was no longer understood as a representational medium but as an ecology of coupling, as articulated in Licklider's (1960) notion of human–machine symbiosis and Engelbart's (1962) program of augmented intelligence. Their work established computation as a shared cognitive milieu in which humans and machines co-evolve through distributed decision-making rather than top-down control. This paradigm also resonates strongly with Daniel C. Dennett's evolutionary account of consciousness, which conceptualizes cognitive phenomena as emergent properties of bottom-up organization (Dennett, 1992). Dennett explicitly positions emergence as a "real, hard-science phenomenon," distinguishing it from any mystified or metaphysical interpretation. His account—drawing on analogies with swarm intelligence and collective adaptability—aligns with the cybernetic turn in which complex behavior arises from the interaction of simple units. In this framework, consciousness itself emerges from layered, decentralized competences rather than from a singular executive command. Such an understanding parallels the cybernetic redefinition of environments: both become multi-scalar, dynamic systems whose organization is continually produced through feedback-rich exchanges.

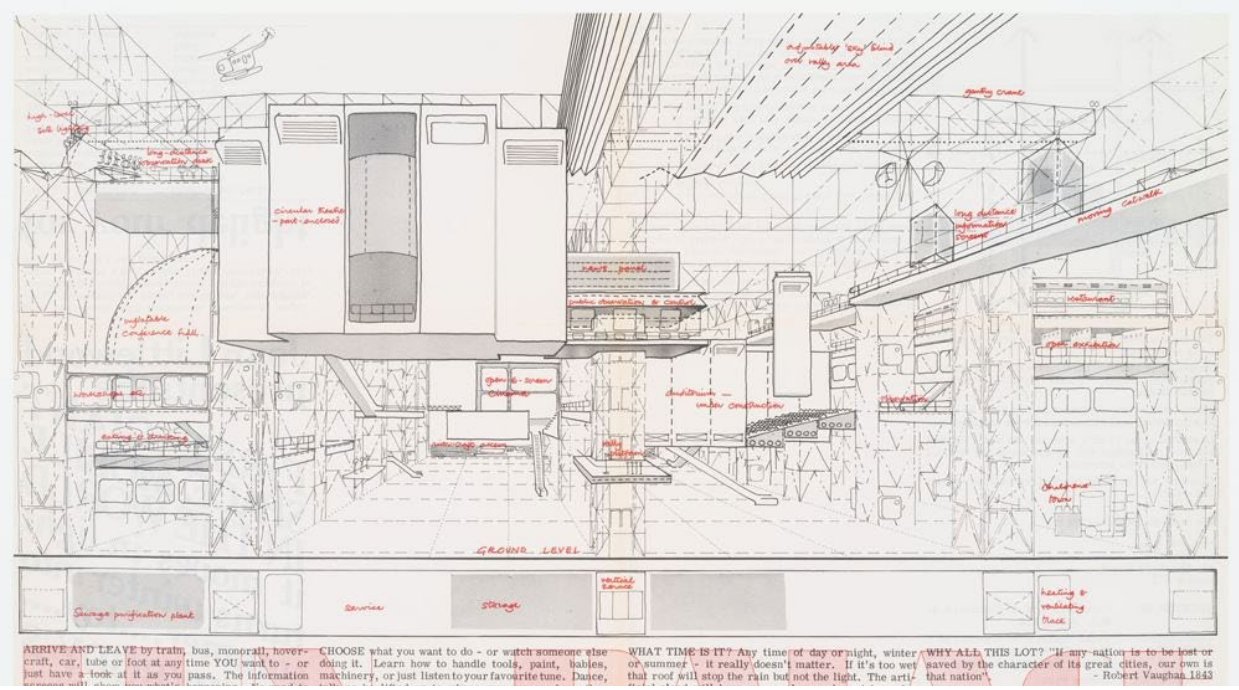

Figure 1. Annotated perspective of Cedric Price's Fun Palace, illustrating its dynamic, reconfigurable spatial framework and programmable architectural components.

Within architectural and design discourse, Gordon Pask extended these principles by formulating a cybernetic aesthetics premised on "conversation" (1971), wherein spatiality materializes through ongoing negotiation between human and nonhuman agents. This conversational model found architectural expression in Cedric Price's Fun Palace (Figure 1) and Generator projects, which actualized space as a contingent, reprogrammable field responsive to user behavior. Friedrich Kittler's (1992) later assertion that "there is no software" foregrounded the operational, infrastructural substrate that underlies all digital

environments, shifting attention from representational interfaces toward material processes of computation. Parallel theoretical formulations by Gibson (1984), Benedikt (1991), and Turkle (1995) further articulated cyberspace as a distributed, rhizomatic, and multi-positional environment—a domain characterized by relationality, multiplicity, and continuous becoming.

XR space thus exemplifies the convergence of cybernetic feedback, emergent cognitive models, and collective intelligence: a synthetic milieu in which human perception, machinic computation, and environmental dynamics co-constitute one another. By foregrounding emergence as both a cognitive and spatial condition, this lineage situates XR not merely as a visual representational technology but as an ontologically generative system, aligning with contemporary theories of processual, non-representational spatial production.

2.3. Liquid, Evolutionary, and Post-Representational Design

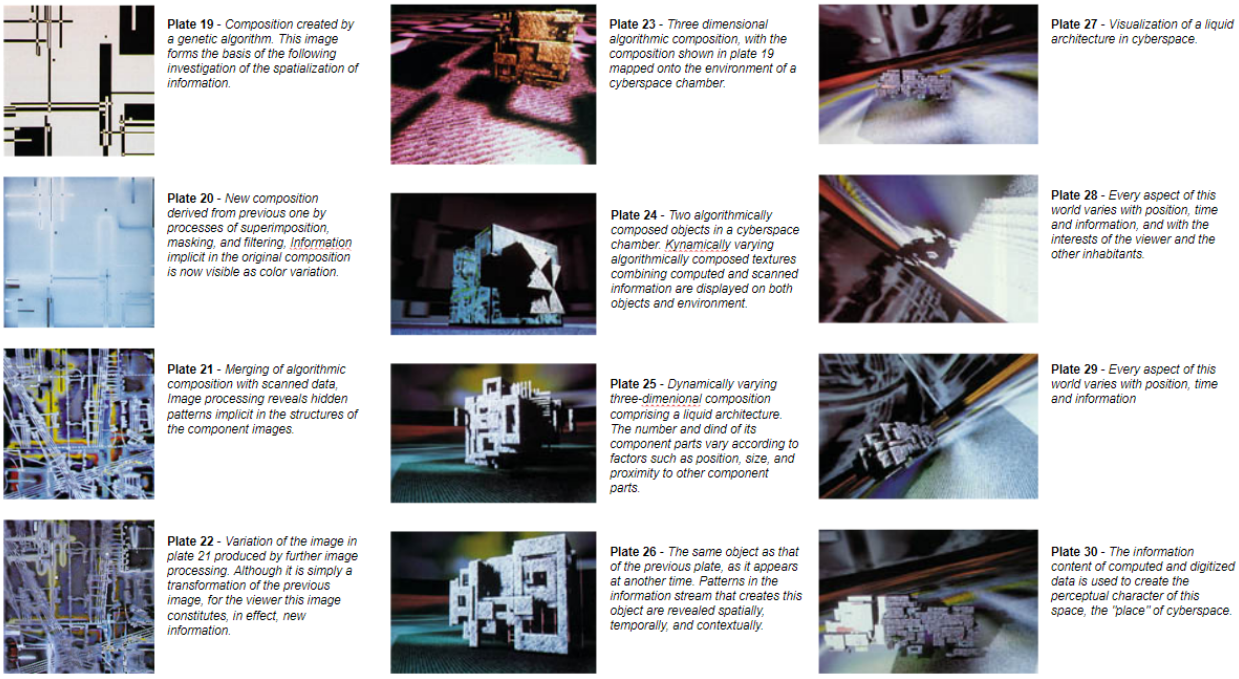

Figure 2. Plates from Marcos Novak's explorations of algorithmic and liquid architectures, illustrating how compositional variation, data-driven transformation, and spatialized information generate continuously shifting cybernetic environments.

By the 1990s, architectural discourse had undergone a decisive turn toward processual, generative, and computation-driven models of spatial production. Marcos Novak's concept of "liquid architectures" (1991) replaced the fixity of Euclidean form with a paradigm of fluidity, mutability, and continuous reconfiguration (Figure 2)—spaces that "are not frozen in time but transform with their users."

In parallel, John Frazer's evolutionary architecture (1995) advanced one of the most rigorous formulations of emergence within design practice (Figure 3). Drawing directly from biological evolution, cybernetic feedback, and artificial life research, Frazer defined architecture as an adaptive morphological system, where form emerges from the iterative interaction of agents, constraints, and environmental forces rather than from top-down authorship. His work operationalized principles of variation, selection, and self-organization, demonstrating that architectural form could evolve computationally as an ecosystem of competing and collaborating entities. Frazer's contribution is central here: he positioned architecture not as an object but as a process of continuous becoming, inseparable from the dynamics that generate it.

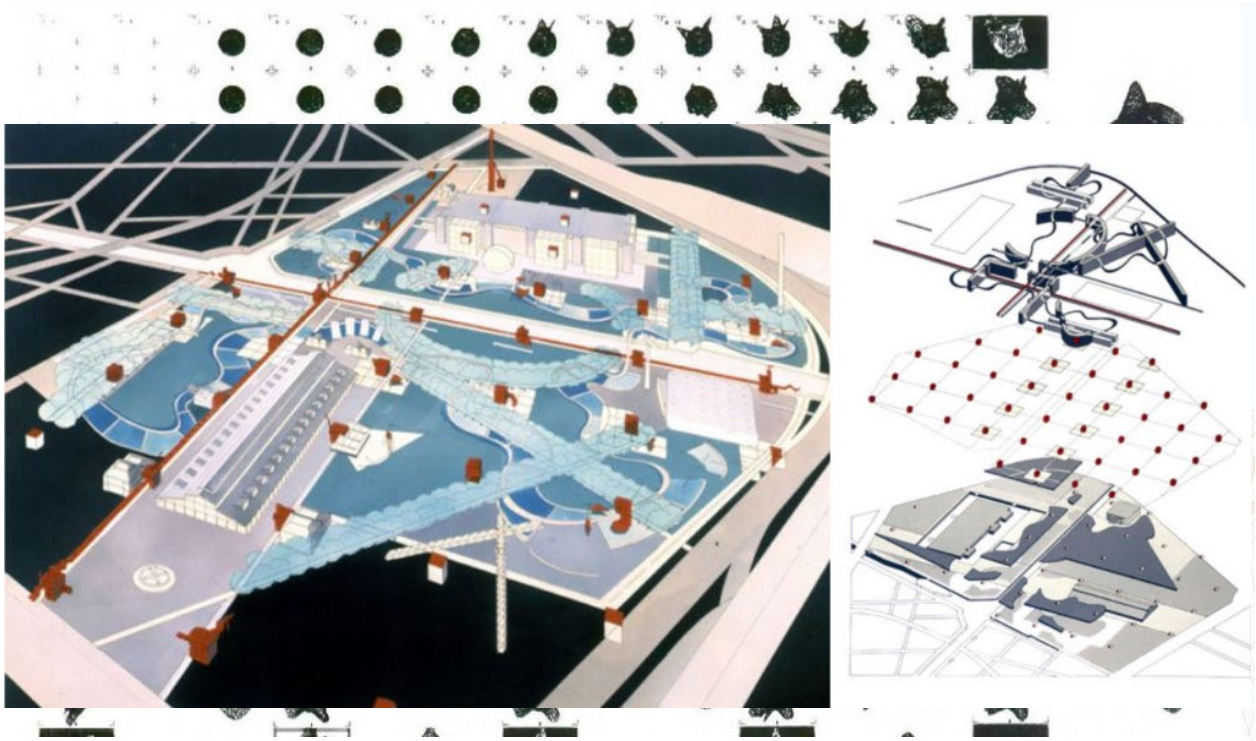

Figure 4. Visualization and diagrammatic breakdown of Bernard Tschumi Architects' Parc de la Villette proposal, illustrating its superimposed programmatic layers and infrastructural grid.

Figure 3. Evolutionary morphology sequence illustrating iterative geometric transformations, showing how small parametric variations accumulate into complex emergent forms.

This evolutionary paradigm converged with contemporaneous work by Oosterhuis (2003), who conceptualized architecture as a data-responsive organism, capable of adjusting its behavior in real time through sensor-actuator loops. Such approaches relocated design intelligence from the architect's representational drawing to the operational logic of a system, foregrounding performance, feedback, and interaction. At the same time, critical theorists such as Tschumi (1994) and Eisenman (1999) challenged the primacy of representational form altogether. For Tschumi, architecture is constituted through events and actions rather than stable geometries (Figure 4); for Eisenman, the dissolution of typological anchoring and authorial intentionality was necessary to confront the increasing abstraction and technical mediation of space. Both argued that architecture could no longer rely on predetermined formal structures—a claim that resonated strongly with computational experiments dismantling the fixity of the architectural object.

Collectively, these trajectories reconceived digital space as a dynamic field of operations—a domain defined less by objects than by interactions, processes, and temporal contingencies. Evolutionary computation,

artificial life, event-based spatial theory, and real-time responsiveness all converged on a shared ontology: space as emergent, adaptive, and continually reconstituted through data-intensive processes. This reorientation aligns directly with the logic of XR environments, where spatiality is produced algorithmically rather than depicted, and where form unfolds as a result of real-time sensing, feedback, and multi-agent interaction. XR thus actualizes the ambitions of the 1990s generative and evolutionary frameworks, transforming them into experiential, inhabitable ecologies in which users, systems, and environments co-produce spatial conditions moment by moment.

2.4. The Digital Turn and the Emergence of XR Spatiality

Mitchell's City of Bits (1995) reconceived the digital city as a network of "informational places," where screens and interfaces replace traditional architectural surfaces. Weiser's (1991) notion of ubiquitous computing further dissolved the boundary between computation and environment, defining space as an ambient field of algorithmic activity. Carpo (2017) later argued that computation has moved beyond representation toward autonomous, real-time operation. XR extends this trajectory by producing spatial conditions through continuous computational differentiation, merging informational variability, cybernetic feedback, and evolutionary emergence into a real-time regime of spatial becoming.

Architectural engagement with XR reflects this shift unevenly. Zaha Hadid Architects' ZHCode experiments—such as Project Correl—enable multi-user interaction within dynamic geometries, yet remain constrained by predefined parametric structures, yielding only partial, top-down emergence. UNStudio's UNSense integrates XR into data-rich urban interfaces, but operates primarily as a visualization and decision-support medium rather than an ontologically generative system. Morphosis' Möbius Lab uses XR for performance simulation and full-scale design assessment, again positioning XR as an interface for refining existing geometries rather than enabling open-ended spatial emergence.

More speculative work, such as Keiichi Matsuda's experimental AR/XR environments, treats immersive space as a synthetic epistemic ecology, dissolving the boundary between cognition, computation, and environment. While conceptually aligned with non-representational theories, such projects remain outside mainstream architectural practice. Research groups like ETH Zürich's Immersive Design Lab and Gramazio Kohler Research occupy an intermediate position, using XR to coordinate multi-agent, robotic, and human workflows; yet even here, XR tends to facilitate interaction rather than autonomously generate spatial conditions.

Overall, contemporary XR practices reveal both promise and limitation. While many incorporate feedback, interaction, and real-time variation, few fully embrace a non-representational, emergent ontology in which spatiality arises from bottom-up computational differentiation. Most still treat XR as a representational layer, interface, or analytical tool. Only a narrow subset approaches XR as a genuinely generative spatial ecology—one capable of producing new spatial conditions through continuous algorithmic unfolding.

3. THEORETICAL BACKGROUND: A NON-REPRESENTATIONAL ONTOLOGY OF XR SPATIAL PRODUCTION

3.1. Difference, Immanence, and the Computational Production of Space

Representational models assume that spatial form preexists its digital instantiation: space is first conceived, then encoded, and finally visualized. Yet XR environments expose the insufficiency of this logic by demonstrating that spatiality does not precede computation but arises from continuous, real-time differentiation. Drawing on Deleuze, difference is not a deviation from an already constituted identity but a generative force that brings forth new configurations, while repetition functions as the temporal mechanism through which these differentiations become perceptible and sustained (Deleuze, 1994/2001). In XR systems, computation enacts these principles directly: each sensor reading, tracking update,

algorithmic iteration, and environmental modulation introduces micro-variations that accumulate into emergent spatial patterns. Rather than instantiating a predefined model, the XR environment is continuously produced through iterative cycles of sensing, prediction, and rendering—cycles that operationalize difference itself.

Deleuze and Guattari's (1987) plane of immanence offers a conceptual frame for understanding these processes. The plane of immanence is not a representational schema but a field in which relations arise internally, without reference to transcendent or pre-given forms. XR systems instantiate this immanent field computationally: the sensing pipeline does not map an external world so much as give rise to a dynamically recalibrated relational milieu; predictive models operate not by reproducing identities but by estimating gradients of potential transformation; and real-time rendering reorganizes spatial conditions continuously in response to these flows. Spatiality, under such conditions, becomes an immanent effect of computational operations rather than a projection of an external referent.

Parisi's (2013) theorization of speculative computation reinforces this shift by arguing that algorithms do not merely process representations; they operate within a virtual continuum of unactualized potentials. Algorithmic processes thus generate outcomes that cannot be fully anticipated or contained by representational models. In XR, this speculative dimension is palpable: the system engages with a surplus of computational potential—predictive uncertainty, sensor noise, probabilistic inference—that actively shapes the unfolding spatial experience. This excess is not an error but a productive dimension of computational virtuality.

Thus, XR spatiality should be understood not as a representational construct but as an emergent expression of computational virtuality—a space produced through continuous differentiation, immanent relationality, and speculative algorithmic potential. XR environments do not visualize preexisting forms; they actualize, moment by moment, a field of virtual forces that constitute space as an ongoing, dynamic event.

3.2. Computational Folding and Emergent Spatial Topologies

Parisi's concept of computational folding articulates how micro-level algorithmic operations recursively inflect and restructure macro-level patterns, producing new, non-metric topological conditions that cannot be reduced to linear causality (Parisi, 2013). Folding, for Parisi, describes a process in which the virtual forces of computation—noise, indeterminacy, probabilistic inference, and preindividual variation—are not eliminated but mobilized as generative capacities. In XR systems, this folding becomes materially operative: sensor data streams are continuously fused with behavioral scripts, environmental parameters, predictive filters, and rendering pipelines. As these heterogeneous processes recursively inform one another, they create feedback-rich loops that generate novel spatial trajectories. What emerges is not a static scene but a topological event—an ongoing spatial formation defined by gradients, tensions, and inflections produced through recursive computation rather than any predefined geometrical form.

These formations resonate strongly with Deleuze and Guattari's (1987) notion of plateaus: zones of intensity that achieve a temporary consistency without becoming fixed or hierarchical. A plateau is never a final structure but a provisional stabilization in a field of continuous variation. XR environments enact this logic directly. They do not impose form from above; instead, they generate momentary coherences through the dynamic interplay of detection, prediction, and rendering. A spatial configuration—such as a stable mixed-reality anchor, a persistent virtual object, or an interactive field of forces—exists only insofar as the system's folding processes maintain its consistency. As new inputs arrive or conditions shift, these plateaus may intensify, mutate, fragment, or dissolve altogether, evidencing their fundamentally processual nature. Crucially, this emergent, folding-based spatiality is not an epiphenomenon or secondary effect layered on top of computation; it is the primary mode through which XR space comes into being. In such systems, space is not a container for computational events but the event of computation itself—a continuously evolving topological field produced through recursive operations that fold micro-differences into perceptible, yet

always provisional, spatial consistencies. This ontological reconceptualization of XR spatiality therefore necessitates a methodological apparatus capable of operationalizing emergence itself, a requirement that the following XR-integrated agent-based simulation is designed to address.

4. XR-INTEGRATED AGENT-BASED SIMULATION: CASE STUDY AND PROTOTYPE DESCRIPTION

In this experimental stage of the research, an exploratory Grasshopper prototype was developed to operationalize an XR-mediated agent-based environment in which the participant acts as an active force within the computational system. Rather than treating XR as a representational channel for displaying predetermined geometries, this trial positions XR as an operational medium through which spatial behaviour emerges from the continuous interplay between embodied movement and algorithmic processes. The prototype is organized into four tightly interconnected subsystems—(1) flocking behaviour computation, (2) field-based modulation, (3) domain mapping and containment, and (4) XR synchronization—which together establish a continuous feedback loop between the participant and the digital agents (Figure 1).

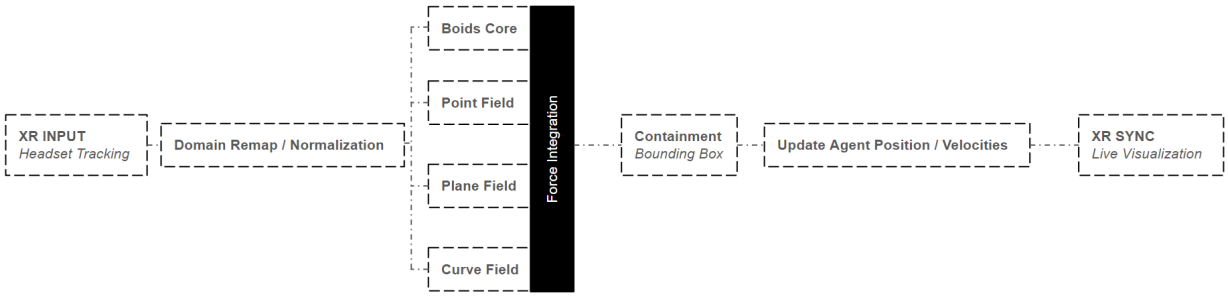

Figure 5. Diagram showing the XR-integrated agent-based workflow, where headset input is remapped, combined with flocking and field forces, constrained, updated, and returned to XR as a continuous real-time feedback loop.

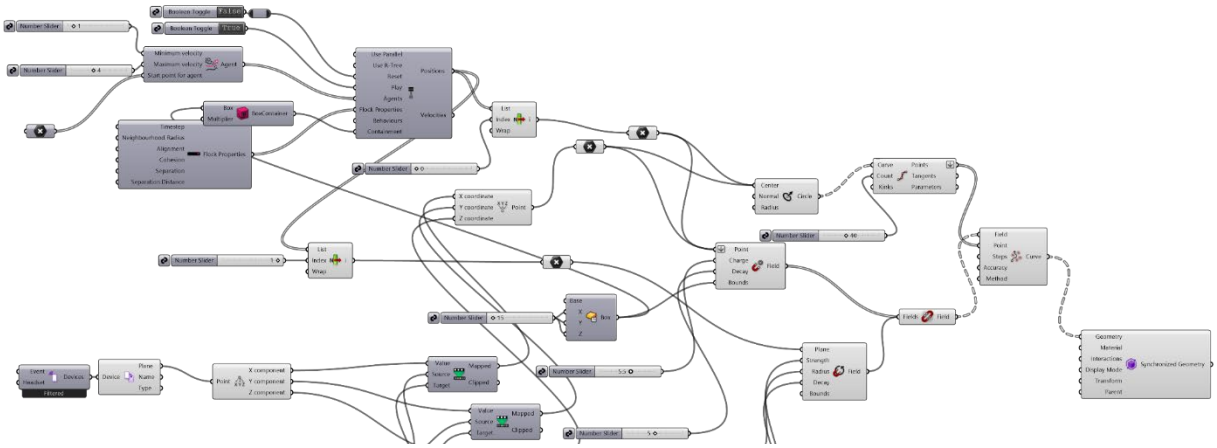

Figure 6. Grasshopper definition illustrating the XR-integrated agent-based system, where flocking behaviour, environmental fields, domain mapping, and XR synchronization operate together to produce a real-time, user-responsive spatial ecology.

The system is driven by a flocking engine based on Reynolds' boids model, implemented through a custom component that processes core behavioural parameters (Figure 2). Neighbourhood Radius defines each agent's perceptual field, while Alignment, Cohesion, and Separation weights—controlled via normalized sliders—regulate collective movement. Separation Distance prevents collisions by enforcing a minimum spacing. Agents can be initialized randomly or from a specified point, and when the "Agent" toggle is active, the participant's headset position becomes the initial state of an agent, embedding the user directly into the computational ecology. Positions and velocities are updated each timestep through parallel computation or R-tree acceleration, allowing responsive performance in XR.

A second behavioural layer is generated by environmental force fields (Figure 3). The Point Charge Field creates proximity-based attraction or repulsion; the Plane Field introduces directional flows; and the Curve Field, sampled at user-defined intervals, produces tangential or normal forces that guide agents along geometric paths. These fields operate as continuous gradients, extending the flock's behaviour beyond neighbour-based rules. Because the participant's headset feeds into the point-charge system, the user acts as a mobile singularity whose movement bends, accelerates, or disperses the agents.

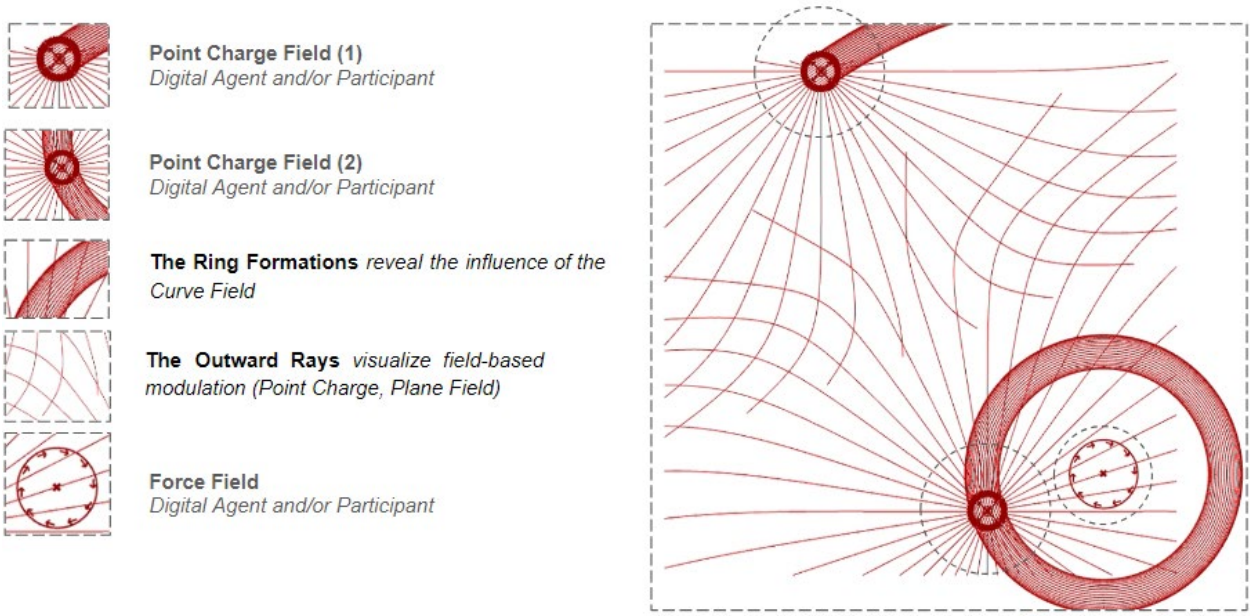

Figure 7. Visualization of agent trajectories shaped by point-charge forces, curve-induced rings, and outward field-driven rays within the XR environment.

The participant's XR coordinates are remapped into stable simulation domains, ensuring controlled influence over the system. A Box Container defines the spatial boundary, applying soft steering forces near its edges to keep agents within view while still allowing emergent dispersal, clustering, and vortex formations. Finally, agent positions are streamed to an XR synchronization component (e.g., Fologram or RhinoXR), updating geometry and interaction states in real time. This closes a cybernetic loop: as the participant perceives and responds to the evolving behaviour, their movement reshapes the force fields and computations that generate it, producing a reflexive spatial ecology co-authored by human and algorithmic agencies.The agents within this environment are not static elements but procedural entities defined by behavioural rules. Each agent is represented by a position vector, a velocity vector, and a neighbourhood set that is updated every frame. At each timestep, the algorithm executes a structured sequence of operations: (1) Neighbourhood Query, in which R-tree methods gather agents within the Neighbourhood Radius; (2) Behavioural Synthesis, computing alignment, cohesion, and separation forces; (3) Field Sampling, where forces derived from point, plane, and curve fields are collected; (4) Participant Input, incorporating the user's position as a live field origin; (5) Force Integration, combining all forces through slider-defined weights; (6) Containment, applying corrective forces near boundaries; and (7) Update, where

each agent's position is incremented by its velocity. This cycle runs approximately 40–90 times per second, generating a fluid, emergent spatial behaviour that is perceptually continuous within XR.

The diagram visualizes a series of emergent spatial configurations generated by the XR-integrated agent-based system (Figure 8 & 9). Each image captures a moment within the continuous feedback loop linking flocking agents, environmental fields, and the participant's embodied movement in XR. The red geometries are not predefined forms but temporal traces of agent trajectories shaped by both neighbour-based flocking rules and force-field modulation driven by the participant's headset position.

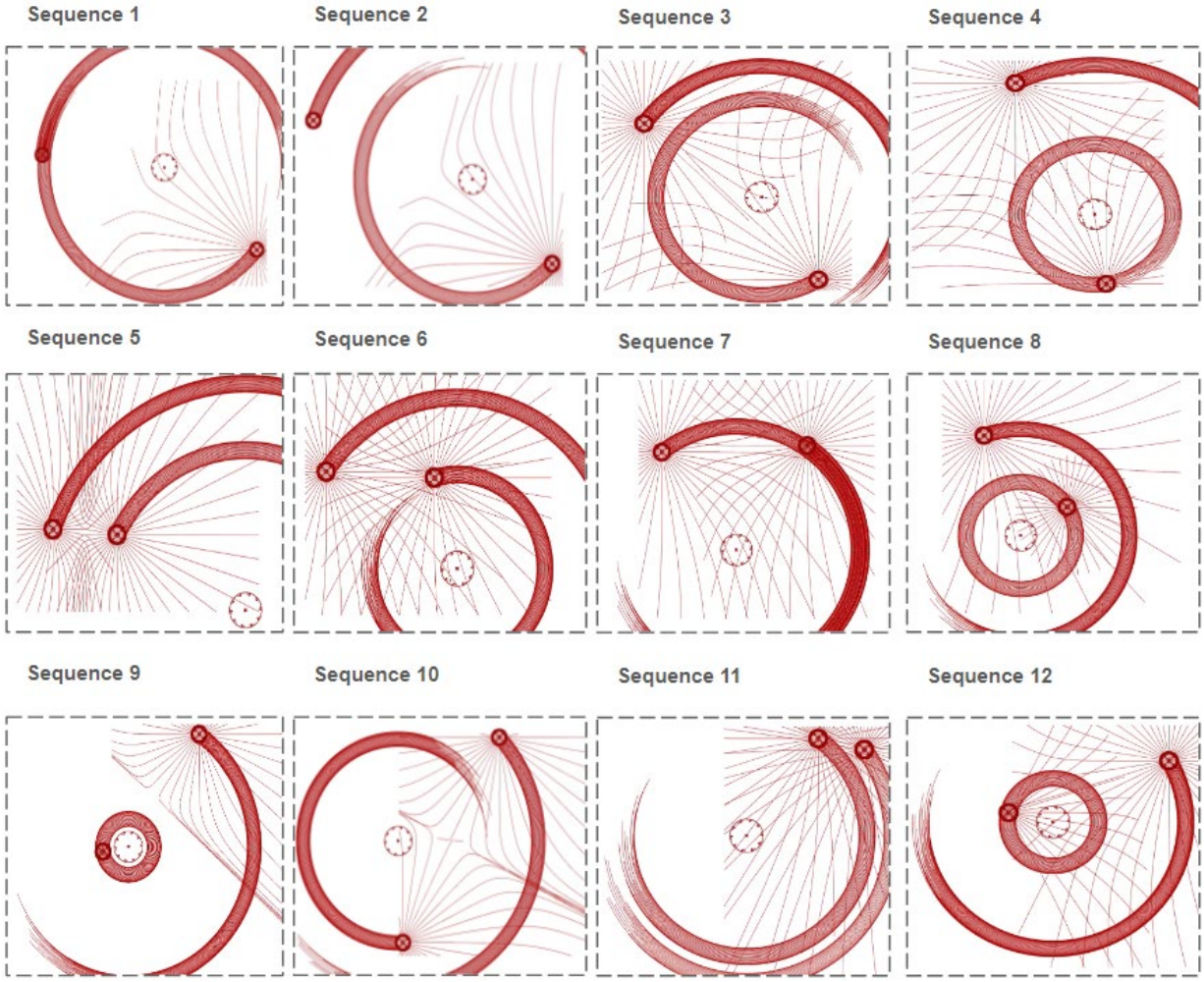

Figure 8. Top-view sequences illustrating the evolving trajectories of agents within the XR-integrated simulation, showing how shifts in user position and field modulation generate varying circular, spiral, and radial formations across time.

At the center of many configurations, agents cluster where cohesion and alignment dominate, forming localized attractors. Radiating linear structures show instantaneous velocity vectors and field-induced displacements, their angular spread reflecting the tension between separation forces and directional influences from point- and plane-based fields. In several diagrams, circular or toroidal rings appear, generated by the Curve Field, whose sampled tangential and normal vectors guide agents into orbital or looping paths. The thickness and consistency of these rings indicate temporary stabilization before the agents disperse again. Elongated radial lines extending from these rings reveal shifting directional biases created when the participant functions as a live point charge. As the user moves, variations in attraction or repulsion strength produce expansions, collapses, and directional sweeps in the agent field. Each burst of lines therefore marks a moment of behavioural reconfiguration triggered by the participant's changing

position within the XR environment. These images can thus be read as topological snapshots of the system's ongoing differentiation, where the agents' trajectories materialize the recursive interactions between behavioural rules, environmental fields, and embodied user input. Rather than representing static geometry, the diagram captures a living computational ecology—a spatial formation generated by real-time agent interactions whose structure remains perpetually open to transformation.

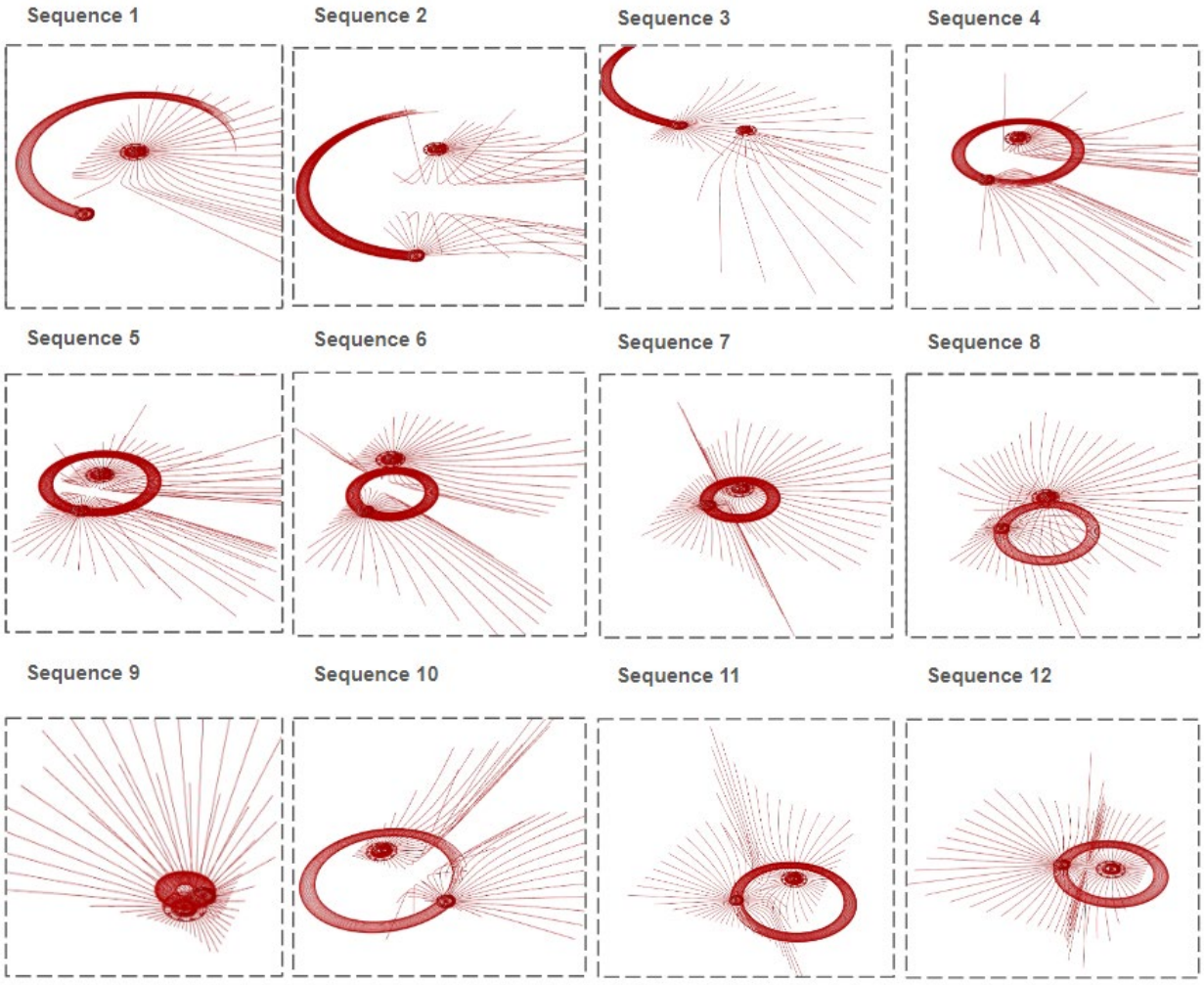

Figure 9. Perspective-view sequences illustrating the evolving trajectories of agents within the XR-integrated simulation, showing how shifts in user position and field modulation generate varying circular, spiral, and radial formations across time.

5. CONCLUSION

This study has proposed an ontological framework for understanding and producing XR-based digital space, arguing that spatiality in immersive computational environments cannot be reduced to representational models or predetermined geometries. Drawing from Deleuze's philosophy of difference and immanence, together with Parisi's theory of speculative computation, the paper has demonstrated that XR spatiality emerges through continuous differentiation—through recursive sensing, prediction, modulation, and algorithmic variation that unfold as real-time topological events. In this context, computation operates not as a representational apparatus but as an immanent field of forces, and XR becomes a medium in which spatial conditions are enacted rather than depicted. The historical and theoretical genealogy traced in the paper—ranging from mechanical computation and cybernetics to evolutionary architectures, ubiquitous computing, and contemporary XR practices—reveals a persistent shift from form-based design logics toward processual, adaptive, and emergent modes of spatial production. Yet the survey of architectural

applications also exposes a conceptual gap: while many XR systems incorporate interaction, feedback, and variation, few fully embrace a non-representational ontology in which space is generated autonomously through bottom-up differentiation. Most remain tethered to parametric constraints, representational workflows, or visualization-driven paradigms.

The agent-based prototype developed in the final section addresses this gap by operationalizing the paper's ontological claims in a computational environment. By coupling flocking behaviours with field-based modulations, remapped XR input, and recursive real-time feedback, the prototype demonstrates how spatial formations can arise from distributed agency and continuous algorithmic perturbation. The emergent trajectories, vortex structures, and field-induced configurations visualized in the diagrams exemplify XR space as a living computational ecology—a spatial condition co-produced by human action and machinic processes rather than imposed through predefined models. Taken together, the theoretical analysis and the prototype provide a foundation for an alternative approach to digital spatial practice: one that treats XR not as an immersive representational interface but as an ontologically generative platform for difference-production. This reframing suggests several directions for future research, including the development of multi-agent XR ecologies with higher-dimensional feedback loops, the integration of machine learning to cultivate non-deterministic morphogenetic behaviours, and the exploration of user–system co-evolution as a mode of spatial authorship.

Ultimately, the paper advances a shift in how digital space is conceptualized and produced, positioning XR as a medium through which spatiality emerges from continuous computation, recursive interaction, and immanent differentiation. Rather than reproducing known architectures, XR environments can thus become sites of speculative becoming—spatial systems that unfold through processes of variation, contingency, and open-ended emergence.

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THE CULTURAL DIMENSION OF INFRASTRUCTURE: RETHINKING HALKAPINAR AS A SPATIAL INTERFACE

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ABSTRACT

The transformation of İzmir's city centre has produced new forms of urban centrality defined not by production or commerce, but by infrastructure. At the eastern edge of this evolving core, Halkapınar functions as İzmir's largest transfer hub, connecting metro, tram, commuter rail, and bus networks. Beyond its logistical role, however, Halkapınar reveals a deeper tension within the city's modernisation: the cultural and spatial disjunction between its industrial past and infrastructural future.

This paper conceptualises Halkapınar as a *spatial interface*—a site where multiple temporal, material, and social layers intersect. Situated near former industrial complexes such as the Tekel factories and railway depots, the area embodies the overlap between industrial memory and infrastructural modernity. Through a critical reading of planning documents, design competition projects, and municipal strategies, the study analyses how infrastructure operates not merely as a technical system but as a *cultural agent* that reshapes urban experience and collective memory.

By comparing Halkapınar with international precedents such as Madrid Río and Hamburg's HafenCity, the paper demonstrates how transport-oriented regeneration often prioritises efficiency and visibility over continuity and meaning. The study argues that infrastructure should be recognised as both a technical and cultural construct—one that materialises progress while reconfiguring identity, memory, and spatial coherence in the contemporary city.

KEYWORDS: Infrastructure; Urban Memory; İzmir; Transfer Hub; Cultural Interface; Industrial Heritage.

1. INTRODUCTION

In contemporary urbanism, infrastructure has moved from an invisible technical background to a visible cultural form. It organizes movement, mediates perception, and constructs urban identity (Larkin 2013; Mattern 2016). Rather than viewing it as a neutral system, this paper approaches infrastructure as a **cultural agent**—a medium through which cities negotiate modernity.

İzmir illustrates this transformation vividly. The *New City Centre* strategy redefined the city's core through mobility and image-making, replacing production with circulation. At its eastern edge, **Halkapınar** operates as the city's largest intermodal hub—linking metro, tram, commuter rail, and bus lines—yet remains fragmented and transitional *(see Figure 1)*. The juxtaposition of obsolete factories and new infrastructures reveals a city in flux: efficiency coexisting with memory, progress with disconnection.

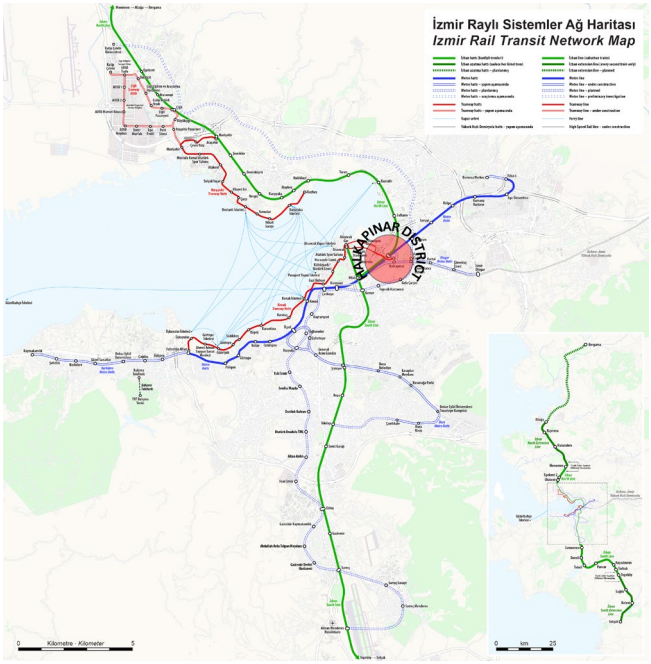

Figure 1. The location of the Halkapınar district within the İzmir transportation network. Modified by the author.

This study interprets Halkapınar as a **spatial interface**, a threshold where technical, social, and historical layers intersect. Using planning documents, competition briefs, and field observations, it examines how infrastructural transformation reshapes meaning and identity *(see Figure 2)*.

Figure 2. Spatial interface of Halkapınar showing the intersection of infrastructural systems, industrial memory, and everyday practices.
Base map © Airbus 2025; modified by the author.

The paper argues that Halkapınar exposes the **cultural dimension of infrastructure** in its most dynamic form—simultaneously connecting and dividing, erasing, and recalling, modernizing, and remembering.

2. INFRASTRUCTURE AND CULTURAL MEDIATION

Infrastructure has long been defined as the hidden technical foundation upon which modern society rests. For much of the twentieth century, it was treated as a neutral and purely functional system—something that enabled but did not itself signify. Yet, over the past three decades, a major paradigm shift has occurred across the humanities and social sciences: the "cultural turn" in infrastructure studies. This shift challenges the assumption of infrastructure's invisibility and instead interprets it as a cultural mediator—a system that shapes, organizes, and communicates meanings as much as it moves people, goods, or data. Within this framework, infrastructure becomes not only a set of physical conduits but also a social and symbolic construct that structures everyday life, collective memory, and spatial imagination.

2.1 The Cultural Turn in Infrastructure Studies

The last three decades have reframed infrastructure from a neutral substrate to a socio-cultural formation. Star and Ruhleder's programmatic move cast infrastructure as relational—visible at moments of breakdown yet structuring everyday practice, standards, and workarounds (Star and Ruhleder 1996; Bowker and Star 1999). This shift redirected analysis from fixed objects to contexts of use, maintenance, and classification.

Urban studies extended that turn spatially. Graham and Marvin (2001) demonstrated how networked systems generate splintering urbanism, producing new centralities and exclusions rather than a homogeneous grid. Infrastructures thus become agents of urban differentiation, re-scaling access, and visibility across territories.

Anthropological and media-theoretical accounts then foregrounded aesthetics and knowledge. Larkin (2013) described the poetics and politics of pipes, rails, and stations—their power to stage modernity,

evoke trust or alienation, and script comportment. Mattern (2016) read infrastructures as epistemic/media systems that store and transmit values about efficiency, order, and progress. Together these strands insist that infrastructures mediate perception as much as they convey flows.

For this study, the consequence is methodological: Halkapınar is approached not as a technical device but as a cultural interface whose meanings arise at the junction of standards, territories, and sensoria. The section's argument is summarized visually in a timeline of key inflection points and a concept map linking relation ↔ fragmentation ↔ mediation across the cited literatures (see Figure 3).

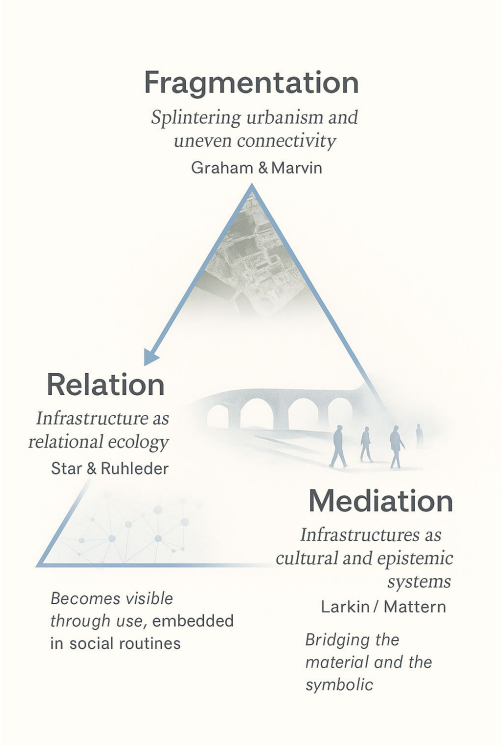

Figure 3. Conceptual relations in the cultural turn of infrastructure studies. Diagram by the author.

2.2 Infrastructure, Memory, and Urban Identity

If the cultural turn redefined infrastructure as relational, the next challenge is to understand how it interacts with urban memory. While infrastructure is often linked to progress and rupture, the city's endurance depends on the persistence of form and collective recall. Rossi's The Architecture of the City (1982) remains central to this debate: urban artifacts, he argued, become repositories of collective memory precisely because they outlast their initial function. Streets, depots, or bridges continue to signify even after their use changes—turning permanence into a cultural medium.

Pierre Nora (1989) reframed this continuity as lieux de mémoire—sites of memory that arise when lived continuity dissolves. Infrastructural sites frequently embody this paradox: they connect the city functionally while disconnecting it symbolically. Huyssen (2003) later expanded this temporal tension through the idea of the "present past," describing modernity's haunted relationship with its own residues. For him, ruins, conversions, and reuses resist total erasure, making memory an active force within contemporary urban transformation.

This tension is particularly visible in post-industrial cities where modernization coexists with nostalgia. Choay (2001) interprets heritage as a symptom of acceleration—the more rapid the transformation, the stronger the urge to preserve. Infrastructure projects often crystallize that paradox: while designed for

efficiency, they overwrite older spatial narratives, generating new forms of cultural loss and selective remembrance.

In İzmir, the persistence of industrial traces—rail lines, depots, factory shells—within infrastructural landscapes such as Halkapınar reflects this layered condition. These relics function as material anchors of memory, even as new systems impose different rhythms of mobility and perception (see Figure 4). The coexistence of steel viaducts and brick warehouses translates the city's modernization into a visible dialogue between continuity and rupture.

Figure 4. Historical transformation of the Halkapınar Flour Mill.

Rather than opposing infrastructure and memory, this section frames them as interdependent: infrastructures embody memory through material persistence, while memory gains spatial expression through infrastructural form. Together they shape the city's identity as a palimpsest, where each modernization embeds rather than replaces its predecessor.

2.3 SPATIAL INTERFACE AS CONCEPTUAL LENS

The notion of the spatial interface emerges from the need to interpret infrastructure not as a static framework but as a zone of mediation—a threshold where technical systems meet social life, and where material operations intersect with perception. Rather than serving as the background of the city, infrastructure performs as an active field of relations continuously negotiated through use, adaptation, and memory.

Stan Allen's theory of infrastructural urbanism (1999) provides the conceptual foundation for this reading. Allen argues that infrastructure should be conceived not as a support for architecture but as a generator of urban form, privileging process, and movement over composition. Infrastructure, in this sense, becomes a spatial choreography—organizing flows, rhythms, and temporalities rather than fixed objects. It defines the conditions of urban life rather than its finished appearance.

AbdouMaliq Simone (2004) extends this logic into the social realm by introducing the idea of people as infrastructure. In cities where formal systems fail or remain incomplete, human networks—interpersonal relations, improvisation, and exchange—perform infrastructural functions. His framework reveals infrastructure as a living assemblage that includes both material and human capacities. Together, Allen and Simone shift attention from infrastructure as an engineered object to infrastructure as interface: a constantly adjusted negotiation between structure and inhabitation.

This relational approach resonates with Tim Ingold's (2011) anthropology of materials, where the city is not a collection of objects but a field in continuous becoming. Infrastructure, viewed through this lens, is temporally open—always under repair, renewal, or reinterpretation. It embodies what Ingold calls the "temporality of materials": the capacity of built form to carry traces of previous configurations while anticipating future adaptations.

Applying this to Halkapınar reveals the concept's analytical strength. The area operates as a spatial interface where industrial memory and infrastructural modernity converge. Metro lines, tramways, and pedestrian flows overlay the remnants of factories and rail yards, producing a layered environment that is neither

obsolete nor fully modern. The coexistence of official circulation patterns and informal pedestrian shortcuts demonstrates how formal and informal infrastructures interpenetrate, forming a dynamic urban ecology. Rather than seeking closure, the site's value lies precisely in its unfinished and negotiated condition.

Thus, the spatial interface offers both a theoretical and methodological lens: it redefines infrastructure as a mediating device—material, social, and temporal—that reveals how cities evolve through friction rather than stability. In Halkapınar, this mediation becomes visible in the overlapping of scales, rhythms, and meanings, where modernization is not a single trajectory but a dialogue between persistence and change.

3. URBAN CONTEXT: İZMIR'S TRANSFORMATION AND THE ROLE OF HALKAPINAR

3.1 From Industrial Production to Infrastructural Centrality

İzmir's spatial evolution mirrors a broader shift in modern cities—from production-based to infrastructure-oriented urban economies. During the late Ottoman and early Republican periods, İzmir's growth was structured by logistics and manufacturing. The industrial belt extending from Alsancak to Halkapınar formed a coherent landscape of rail-linked factories, depots, and warehouses that tied the port to the hinterland (Tekeli 1992). This configuration anchored İzmir's identity as both an industrial and mercantile city.

By the 1980s, however, national economic liberalization and global integration displaced heavy industry to peripheral zones such as Çiğli and Kemalpaşa (Keyder 1999). As production retreated, the metropolitan agenda turned toward services, culture, and visibility. The municipality's New City Centre strategy in the early 2000s sought to reinvent İzmir's image through redevelopment of its waterfront and transport nodes. Infrastructure—metro, tram, and commuter rail—became not only the technical skeleton but also the symbolic representation of this modernization (İzmir Metropolitan Municipality 2009).

Within this logic, Halkapınar emerged as the new operational heart of the city. Its former industrial grounds were reconfigured into a multimodal transfer zone linking metro, İzban commuter rail, tram, and bus systems. Yet the transformation from production to circulation produced ambivalence: a landscape designed for transfer but lacking urbanity. The efficiency of movement replaced the density of social life once sustained by factories and workshops.

This transition reflects what Graham and Marvin (2001) describe as splintering urbanism: infrastructures connect and fragment simultaneously. The integration of İzmir's transport network improved accessibility yet created spatial discontinuities—zones optimized for flow but disconnected from local life. Halkapınar's industrial traces remain physically present but socially marginal, producing what Lefebvre (1991) would call residual space: areas that persist beyond the dominant logic of modernization.

Such residuality, however, also generates cultural value. The coexistence of industrial ruins and infrastructural networks creates a layered urban field where different temporalities collide. The site's hybridity encapsulates İzmir's ongoing negotiation between memory and modernity, production, and mobility. Reading Halkapınar as a landscape of transition thus allows us to understand infrastructure not as the opposite of industrial heritage, but as its contemporary continuation—another mode through which the city organizes and represents itself over time.

3.2 Halkapınar as a Landscape of Transition

Halkapınar's current landscape embodies the temporal and spatial contradictions of İzmir's modernization. Once a zone of warehouses and depots, it now operates as the city's central interchange—an infrastructure that connects yet divides. The site's layered morphology reveals what urban geographers describe as transitional space: a condition where remnants of the industrial city coexist with the emergent logics of mobility and visibility (Harvey 1989; Choay 2001).

Field observations show this coexistence in everyday detail. The former Tekel factory walls border new tram lines; fragments of rail sidings are embedded in parking lots; informal pedestrian shortcuts cut across fenced transfer platforms. These small gestures articulate what de Certeau (1984) calls tactics of appropriation—acts through which users reintroduce lived experience into spaces dominated by circulation.

Despite its functional centrality, Halkapınar lacks spatial coherence. Infrastructure organizes movement but not encounter. Elevated tracks and multilayered viaducts create strong visual barriers, fragmenting the area into inaccessible pockets. What remains of the industrial fabric serves as both memory and obstacle: buildings without program, lots awaiting redevelopment, ruins that testify to halted transitions. Yet, these conditions also produce a unique form of urban texture—a continuously rewritten interface between permanence and flux.

Interpreted through the framework of the spatial interface, Halkapınar operates as more than a transfer node. It is a field of negotiation where different temporalities—industrial, infrastructural, and speculative—collide. Its incompleteness is not failure but expression: a spatial condition that materializes the uncertainty of post-industrial transformation. In this sense, the site functions as an open archive of İzmir's evolving identity—recording the city's shift from production to circulation, from fixity to flow.

3.3 Material Layers and Spatial Discontinuities

The physical structure of Halkapınar reveals the layered accumulation of İzmir's urban transformations. The coexistence of rail lines, viaducts, service roads, and abandoned factory parcels forms a dense infrastructural palimpsest—each layer inscribed with a distinct logic of production, mobility, or renewal. These overlapping systems produce what Graham and Marvin (2001) describe as infrastructural fragmentation, where connections at one scale generate disjunctions at another (see Figure 5).

Figure 5. Material layers and spatial discontinuities in Halkapınar, İzmir. Industrial heritage (blue), infrastructure (yellow), and everyday practices (red) are shown.
Base map © Airbus 2025; modified by the author.

Walking through the site exposes the material evidence of transition: steel bridges that cross over obsolete rail spurs; concrete transfer platforms beside weathered brick walls; residual lots filled with spontaneous vegetation. These juxtapositions embody the temporality of materials discussed by Ingold (2011)—matter

that remembers its prior configurations even as it adapts to new ones. Each surface tells a story of re-use and displacement, revealing the city's transformation not through demolition but through accumulation.

However, this layering also generates spatial discontinuities. Elevated infrastructures create shadows and voids beneath them; pedestrian routes are severed by fences and access restrictions; the visual dominance of transit systems isolates surrounding neighborhoods. Lefebvre's (1991) notion of produced space is instructive here: the logic of mobility imposes an abstract order that conflicts with the lived, tactile scale of the city. What results is a landscape optimized for efficiency but impoverished in experience.

Yet these discontinuities are not merely negative. They open opportunities for re-interpretation and informal adaptation. Under viaducts and along residual corridors, small repair shops, informal kiosks, and temporary shelters reclaim otherwise neglected space. Such micro-occupations suggest that even within the most technocratic environments, everyday practices persist as acts of cultural agency (de Certeau 1984). In this sense, fragmentation becomes a form of resistance—an alternative way of inhabiting infrastructure.

Halkapınar thus materializes the contradictions of contemporary urbanization: a place where the physical remains of industrial modernity coexist with the abstractions of infrastructural design. Its layered surfaces embody both memory and rupture, making visible the interface between past and future. Recognizing these discontinuities not as failures but as cultural traces enables a richer reading of İzmir's modernization—one that understands infrastructure as a living archive rather than a finished system.

4. READING INFRASTRUCTURE AS CULTURAL FORM

Infrastructure, often dismissed as mere utility, increasingly functions as a cultural form—a system that organizes not only circulation but also meaning and representation. Its materiality and visibility shape how societies imagine progress, order, and collective identity (Larkin 2013; Mattern 2016). When viewed through this lens, Halkapınar becomes more than a logistical interchange: it is a stage where the narratives of modernization, memory, and everyday life converge (see Figure 6).

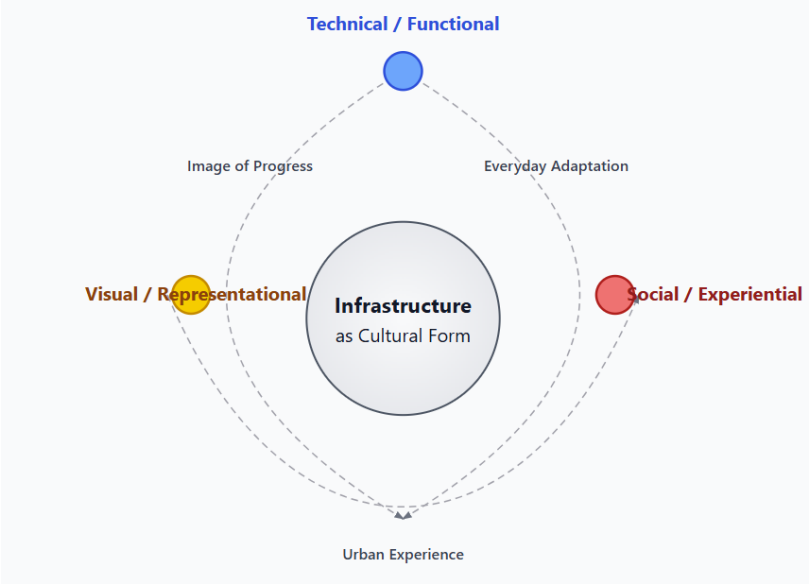

Figure 6. Infrastructure as cultural form represented through a curved tri-axial model. Diagram by the author.

Larkin (2013) describes infrastructures as aesthetic and institutional frameworks that both symbolize and sustain regimes of modernity. In İzmir, this institutional dimension becomes visible through the city's infrastructural landscape, where large-scale projects aim to communicate efficiency, order, and

modernization Halkapınar's elevated tracks and viaducts project an image of modernization while simultaneously masking the spatial fragmentation produced by redevelopment. The design competition for the Halkapınar Transfer Centre (İzmir Metropolitan Municipality 2019) reflected this tendency: proposals emphasized transparency and seamless circulation, aligning with the municipality's broader ambition to project a coherent image of progress. Yet these visions often overlooked the everyday complexity of the site—the remnants of industrial structures, the informal pedestrian routes, and the social rhythms that give Halkapınar its layered identity. In this sense, İzmir's infrastructural discourse becomes one of *representation*: modernization is expressed visually and technically rather than spatially and socially.

Beyond this institutional dimension, infrastructure also structures the rhythms of everyday life. Scholars such as Amin and Thrift (2002) argue that urban culture unfolds through routine infrastructures—commuting, waiting, transferring. In Halkapınar, these repetitive acts form a collective choreography of urban modernity. The experience of movement, pause, and interaction within transfer spaces transforms technical infrastructure into a medium of social life. Waiting areas, informal crossings, and spontaneous encounters reveal how people reintroduce culture and agency into spaces designed primarily for efficiency.

Finally, infrastructure operates as a *living archive*—a material record of the city's successive transformations (Rossi 1982; Huyssen 2003). In Halkapınar, traces of industrial rail lines coexist with the gleaming surfaces of the metro network. Each infrastructural layer inscribes a temporal code, transforming the site into a repository of İzmir's urban memory. Recognizing this archival dimension allows us to move beyond the binary of progress versus decay, and to see infrastructure as a spatial text that continually rewrites the city's identity.

5. DISCUSSION: INTERFACE, IDENTITY, AND CONTINUITY

Halkapınar demonstrates how infrastructure functions simultaneously as a technical system and a cultural interface. Rather than separating the city's past from its future, it mediates between them—translating industrial memory into infrastructural modernity. This mediation, however, is not seamless. It occurs through friction, adaptation, and partial erasure. The interface, in this sense, becomes a field of negotiation where competing temporalities and urban imaginaries intersect.

At the technical level, Halkapınar's transport systems epitomize İzmir's ambition for connectivity and metropolitan identity. Yet, as the site's material layering shows, connectivity also produces fragmentation. Elevated viaducts and interchange platforms create new forms of exclusion, dividing pedestrians from the very networks designed to unite them. This paradox resonates with Graham and Marvin's (2001) critique of networked urbanism: infrastructures bind the city together while simultaneously stratifying its spaces.

Culturally, these disjunctions reveal how identity is produced through continuous transformation rather than fixed form. İzmir's modernization no longer unfolds through monumental architecture but through the visibility of circulation itself. As Mattern (2016) argues, infrastructure shapes not only how cities function but how they think about themselves—as dynamic, connected, and efficient. In Halkapınar, this self-image is constantly contested by the persistence of industrial remnants and informal practices, which anchor modernization in local memory.

The spatial interface thus emerges as both a descriptive and normative concept. Descriptively, it captures the overlapping systems—technical, social, and symbolic—that constitute contemporary urban space. Normatively, it proposes a new design ethic: one that values continuity within change. Instead of erasing obsolete structures, design can reinterpret them as mediating elements between historical depth and infrastructural future (see Figure 7).

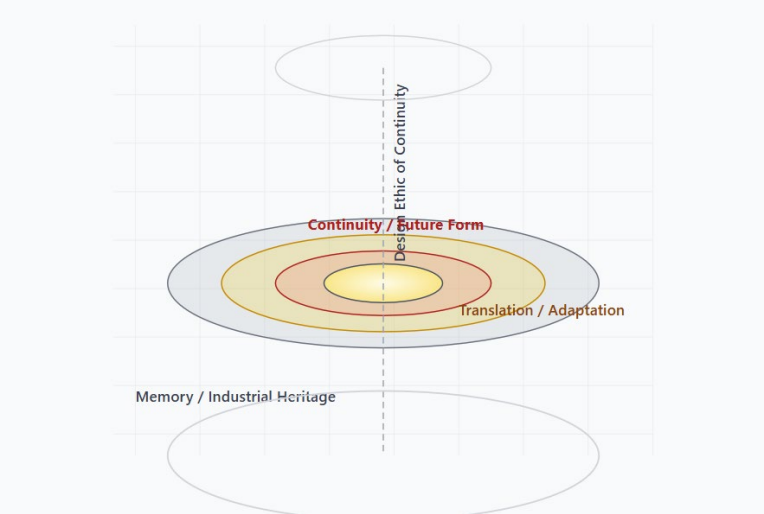

Figure 7. Spiral of transformation illustrating continuity as a process of reinterpretation. Diagram by the author.

In this light, Halkapınar is not merely a logistical node but a mirror of İzmir's urban identity—defined by negotiation, incompleteness, and resilience. The site's layered fabric demonstrates that cultural continuity in the modern city does not depend on preserving fixed forms but on sustaining relationships between fragments. The challenge for future urban design is therefore not to perfect the interface, but to keep it open—to embrace infrastructure as a living process through which cities remember, adapt, and reinvent themselves.

6. CONCLUSION

The case of Halkapınar reveals that infrastructure is not merely a technical apparatus but a cultural process—one that materializes the city's ongoing negotiation between memory, modernity, and mobility. Through its evolving spatial layers, the site demonstrates how infrastructural transformation produces both connection and fragmentation, visibility and erasure, continuity, and rupture.

Reading Halkapınar as a spatial interface reframes the discourse on urban modernization in İzmir. The concept highlights mediation rather than opposition—between the industrial past and infrastructural future, between formal systems and everyday improvisations. Such an approach acknowledges that cities do not progress by replacing the old with the new but by continuously reconfiguring their existing material and cultural strata.

For architectural and urban theory, this perspective extends the "cultural turn" in infrastructure studies toward a spatial ethics of continuity. It proposes that design should operate not as an act of replacement but as one of translation—transforming inherited forms into active participants in the contemporary city. Rather than treating obsolescence as failure, the spatial interface invites us to see it as a condition of creativity, where the unfinished becomes the site of renewal.

Halkapınar exemplifies how infrastructure can embody collective memory while shaping new urban identities. Its layered fabric—industrial, infrastructural, and social—constitutes a living archive of İzmir's transformation. Recognizing this dynamic allows us to move beyond the binary of tradition versus progress and to imagine infrastructure as an agent of cultural continuity—a framework through which cities remember, adapt, and project themselves into the future.

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REIMAGINING THE SUBURBS: VICTOR GRUEN'S LEGACY FOR THE REHABILITATION OF CONTEMPORARY SUBURBAN AREAS

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ABSTRACT

Victor Gruen, often celebrated as the architect of the modern shopping mall, was also a visionary in rethinking suburban life. This paper explores Gruen's design philosophy and his innovative contributions to suburban planning, particularly his emphasis on creating vibrant, multifunctional environments that blend residential, commercial, and cultural spaces. Drawing on Gruen's architectural and urban planning theories, the paper examines his belief that suburban areas could be revitalized by incorporating pedestrian-friendly layouts, mixed-use developments, and communal spaces to foster social interaction and economic sustainability. By analyzing his work and comparing it with contemporary suburban developments, this study highlights the enduring relevance of Gruen's ideas in addressing today's challenges in suburban sprawl, environmental sustainability, and the quest for more connected, livable communities. Ultimately, the paper argues that Gruen's holistic approach to suburban life offers valuable insights for redesigning suburban spaces in the 21st century, making them more responsive to the needs of residents while promoting environmental and social well-being.

KEYWORDS: urban explosion; public places; collective spaces; non-places; Victor Gruen

1. THE URBAN EXPLOSION AND ITS EFFECTS ON PUBLIC PLACES

The urban growth caused by industrialization and urbanization and therefore the subsequent crisis of the historical mobility networks has led to the inevitable abandonment of the traditional way of conceiving and designing public spaces. Much literature has been written on the functional separation brought about by the emergence of the principles promoted by the Modern Movement and urban planning based on zoning and on functional separation. This literature, with its often nostalgic accents, has not been followed by a similar discussion of the implications that the transformations described above have had on the relationship between public space and transport infrastructure and consequently on the character of new suburban public spaces. In fact, the separation of large traffic flows from urban centers entailed the almost complete decoupling of transport infrastructures and urban public spaces. The urban crisis took place at staggered times based on the level of industrialization and motorization of different countries and cities. In large American cities, such as Boston, Chicago and New York, it manifested itself as early as the turn of the 19th and 20th centuries.

The solutions adopted in the different countries were diverse. In the United States the removal of large traffic flows from the Central Business Districts was going to damage huge economic interests, so it was tried to safeguard the accessibility of these through the creation of true urban highways. These entailed huge public works and massive demolitions inside city centers. The case of the Central Artery, built in Boston in the 1950s as the John F. Fitzgerald Expressway, is one of the most emblematic. Funded with $100 million worth of bonds, it involved the destruction of large parts of the city's most central neighborhoods and was met with enormous opposition by residents and businesses that were being harmed (Tsipis, 2001). In the mid-1970s, due to its devastating effects on urban livability, plans were already being made for its undergrounding. At the beginning of the 1980s the first plans were drafted and after seventeen years of work, in 2007, the new underground freeway was inaugurated. This further titanic work of engineering had cost, at current values, the gigantic sum of 24 billion dollars (Moskowitz, 2012). Despite these huge investments, however, the attempt to safeguard the economic and financial interests of the Central Business Districts was doomed to failure. Demographic, financial, commodity and mobility flows would have shifted inexorably to suburban areas, triggering ruinous trajectories of decline and of social and material degradation in the downtown areas. In some cases, these central spaces, once thriving business districts, would never again experience a real recovery process.

In Italy, these phenomena began much later. The rate of motorization began to grow exponentially in the late 1950s. This, in turn, determined a real crisis in the now obsolete historical mobility network. Already in the mid-1960s, the first experiments in pedestrianizing some parts of the historic centers began. At the same time, large-scale programs for the construction of new infrastructures and for functional decentralization were conceived. These projects adopted different planning models. To remain in the Florentine area, the Detti Plan, adopted in 1962, proposed a model of decentralization organized along a major axis connecting Florence to Prato and hosting the main commercial and directional facilities. However, compared to the rapidity with which the 'suburban flight' reconfigured the economic and social geography of large American cities, in Italy the decentralization process took place in a much slower and incomplete manner, reaching a degree of completion only in the last thirty years.

In fact, until a few decades ago the regional system was still urban-centric. Each portion of the urbanized countryside gravitated towards a historic center where all services (commercial, directional, etc.) were located. Today, such a hierarchy has definitely collapsed and historic centers are just nodes, often peripheral, of wider regional systems whose barycenter is in the periphery. The main commercial, service, and directional functions, both public and private, have moved towards the edge of urban areas, close to major arterial routes. New social spaces have arisen in peripheries as well: from outlets to sports facilities, from multi-theaters to gas stations, from entertainment centers to parking lots. These same historic centers are used in very similar ways to shopping malls: you get the car, find parking in a multi-story garage, and

plunge into a crowd of consumers. In terms of regional hierarchies we have shifted from a polycentric system to a centrality that is dispersed throughout the entire urbanized territory.

Although suburban studies made considerable progress in recent years, most scholars and politicians are still bound to a pre-modernist idea of the city. They go on conceiving the city and the country as two totally distinct worlds. Metaphors alluding to urban walls (urban boundaries, green walls, etc.) are largely used to symbolically or physically mark boundaries that only exist in our minds. Wachsmuth (2014) pointed out that these conceptions have strong ideological connotations. In most suburban peripheries such boundaries are simply impossible even to imagine. Aside from the fact that a sharp distinction between city and country never existed in the past (Bruegmann, 2005), the problem with this way of conceptualizing the territory is that it obstructs our capacity to solve real problems and to seize the many opportunities that contemporary suburban landscapes offer (Sieverts, 2003; Ingersoll, 2006). New social spaces are assimilated into the non-places of an alienated existence. The corollary of such an absurd postulate is that nobody takes up the task of controlling and guiding the production of these spaces in order to maximize the benefits to society. This is paradoxical even in historical terms: the shopping mall was invented in 1940s by a socialist utopian, Victor Gruen, in order to create a place for public life in the suburbs; in his visionary Broadacre City, Frank Lloyd Wright conceived gas stations as community centers. A paradigm shift is a prerequisite for better-balanced development: the shift consists of recognizing that the periphery has become the center.

2. THE RHETORIC OF 'NON-PLACES': A WAY OF LOOKING THAT OBSTRUCTS OUR VIEW

The concept of non-places, introduced by Marc Augé in his 1994 book of the same name, is often used to describe most of the spaces that characterize the contemporary city. This use is widespread among architects and urban planners, who often qualify as ‘non-places’ spaces ranging from shopping centres to airports, car parks, service stations, public housing districts, and the suburbs in general. I believe that the concept of the non-place is an ideological device that is both useless and harmful. Its uselessness derives from its inadequacy to describe any social-spatial system. In fact, by qualifying a space as a non-place, a generic negative connotation is attributed to it and, in fact, its deeper understanding is precluded. The harmfulness of this concept is a direct consequence of its futility. By preventing us from understanding the complexity of the social dynamics that take place in space, the concept of non-place ends up by greatly limiting the design capacity of architects, urban planners, and politicians. This is particularly regrettable, since the spaces considered non-places by dominant urban thinking correspond to much of the contemporary city and its suburbs. Therefore, it stands to reason that the frequent use of this concept would manifest a widespread attitude that is unscientific, ideological and nostalgic to the study and planning of the contemporary city and suburban areas.

What Augé defines as non-places constitute the main social structure of the contemporary city. This social framework has been little studied by academics, and neglected by architects, urban planners and politicians, who have only in a handful of cases been able to plan and design it in a way that is appropriate to its economic and social function. I argue that by challenging Augé’s concept of non-places, and proffering a theory that instead elevates and promotes these important spaces, it would be possible to manage and organize them appropriately as well as explore their full potential through architectural and urban design.

For Augé, non-places are the product of what he defines with the neologism ‘supermodernity’ (surmodernité), that is, the current condition characterized by three main figures of excess: overabundance of events, spatial overabundance, and the individualization of points of reference. For Augé, supermodernity, that is to say the present era characterized by excesses, essentially produces non-places, i.e. spaces without history, identity and social relations.

“[N]on-places are the real measure of our time; one that could be quantified – with the aid of a few conversions between area, volume and distance – by totalling all the air, rail and motorway routes, the mobile cabins called ‘means of transport’ (aircraft, trains and road vehicles), the airports and railway stations, hotel chains, leisure

parks, large retail outlets, and finally the complex skein of cable and wireless networks that mobilize extraterrestrial space for the purposes of a communication so peculiar that it often puts the individual in contact only with another image of himself." (Augé, 1995, pp. 51-52).

The concept of non-place is defined by Augé in opposition to that of anthropological place. Of variable size, the anthropological place is such insofar as it is an entity invested with meaning. It is also concerned with identity, as a place of birth and of self-identification; relational, as the object of a shared identity as well as support of social relations; and historical, as it is stable over time and it is possible to find in it points of reference that are considered as fixed and immutable. On the contrary "*a space which cannot be defined as relational, or historical, or concerned with identity will be a non-place*" (Augé, 1995, p. 77-78).

Although the title of Augé's book speaks of the 'anthropology of supermodernity', his definition of non-places – and his repeated classification of their features – is not presented as a research hypothesis to be verified through accurate anthropological work but is a kind of 'ideal type'. This is somehow recognized by Augé himself when he states: "*Place and non-place are rather like opposed polarities: the first is never completely erased, the second never totally completed; they are like palimpsests on which the scrambled game of identity and relations is ceaselessly rewritten*" (ibid. p. 79). It is interesting, therefore, to consider the concept of non-place in light of Max Weber's definition of ideal type: "*It is a conceptual construct (Gedankenbild) which is neither historical reality nor even the "true" reality. It is even less fitted to serve as a schema under which a real situation or action is to be subsumed as one instance. It has the significance of a purely ideal limiting concept with which the real situation or action is compared and surveyed for the explication of certain of its significant components.*" (Weber, 1949, p. 93)

If we assume that Augé's non-place falls into the category of the ideal type described by Weber, what is missing from the work of the French anthropologist is the comparison of this concept with the empirical reality of which Weber speaks in the above definition. Spaces that are identified as non-places are never described and studied by him except in a generic, abstract and atopic way. This is the case when he speaks of shopping centres, which he claims are experienced "*through gestures, with an abstract, unmediated commerce; [and that are] a world thus surrendered to solitary individuality, to the fleeting, the temporary and ephemeral*" (Augé, 1995, p. 78). Similarly, he imagines a hypothetical user of non-places as a "*foreigner lost in a country he does not know (a 'passing stranger') [who] can feel at home there only in the anonymity of motorways, service stations, big stores or hotel chains*" (p. 106). Also following this model are his descriptions of airports and stations, perhaps the spaces that are closest to the ideal type conceived by Augé.

Now, as we have seen, the non-place is defined as the negation and opposite of the place. The latter is such only if it is historical, identitarian and relational. Even this definition is questionable to say the least. In fact, by prioritizing the characteristics of history and identity, the concept of place thus refers to a narrow and potentially perverse conception of the relationship between space and community, one in which those whose histories and identities are not rooted in the place where they live – who make up a considerable and growing share of the population of every contemporary city – might in theory have no right to claim to belong to that community or territory. In my opinion, the notion of place defined by Augé risks interpretation in this narrow and exclusionary sense.

Being representative of the current era, non-places describe what Henri Lefebvre would have defined, albeit in different words, as the production of abstract space in contemporary capitalist society. Behind the concept of non-place, in fact, there is on the one hand a general criticism of urbanization, and on the other, a yearning for the pre-industrial city. In fact, Augé's book is dominated by a clear nostalgic accent, which can also be discerned in works by many of the great critics of contemporary urbanization, including Lefebvre. It is important to give due attention to the persistent longing for the old city, as it continues to have profound effects on the way space is being produced today.

The notion of non-place developed by Augé in 1992 is part of a broader narrative characterized by nostalgia for the city of the past and by phobia of the contemporary city. Nostalgia for the city and countryside of the previous era has shaped the planning debates in Europe and the United States since their originations (e.g.

Secchi, 1984, Boyer 1983). I will focus in particular on Lefebvre, an author who had a strong influence on the urban debate and policies in Europe since the early 1960s. In the Anglo-Saxon context, the scholar who most contributed to what we could call 'suburbs-phobia' is certainly Jane Jacobs (1961). Lefebvre's critique of contemporary urbanization is based on the Marxist concepts of work and product, use value and exchange value. While use value is related to the utility of a good, exchange value refers to its selling price. For Lefebvre, contemporary urban growth has abandoned the traditional urban model in favour of abstract urbanization. Whereas the city of the past was a work (oeuvre) and was socially experienced according to its use value, contemporary urbanization is conceived as a product to be exchanged on the market as any other good. The shift from the traditional city to urbanization, determined by the advent of industrialization, causes the disappearance of community relations typical of pre-industrial societies: in fact, contrasting with today's model, in the past the city was considered a work of art to be used and enjoyed without any consideration for profit.

"This city is itself oeuvre, a feature which contrasts with the irreversible tendency towards money and commerce, towards exchange and products. Indeed the oeuvre is use value and the product is exchange value. The eminent use of the city, that is, of its streets and squares, edifices and monuments, is la Fête (a celebration which consumes unproductively, without other advantage but pleasure and prestige and enormous riches in money and objects." (Lefebvre, 1996, p. 66)

In addition to being poorly supported in terms of historical research, this way of representing the old city is quite idealized. In contrast, the representations of the periphery provided by Lefebvre are strongly dystopian. Also, they have more than one point in common with Augé's descriptions of non-places.

"Urban reality, simultaneously amplified and exploded, thus loses the features it inherited from the previous period: organic totality, belonging, an uplifting image, a sense of space that was measured and dominated by monumental splendor. It was populated with signs of the urban within the dissolution of urbanity; it became stipulative, repressive, marked by signals, summary codes for circulation (routes), and signage. It was sometimes read as a rough draft, sometimes as an authoritarian message. It was imperious. But none of these descriptive terms completely describes the historical process of implosion-explosion (a metaphor borrowed from nuclear physics) that occurred: the tremendous concentration (of people, activities, wealth, goods, objects, instruments, means, and thought) of urban reality and the immense explosion, the projection of numerous, disjunct fragments (peripheries, suburbs, vacation homes, satellite towns) into space." (Lefebvre H., 2003, p. 14).

It is not difficult to take a contrasting viewpoint and see how, in many cases, the monumental splendour of historical cities had opposite meanings to the positive ones attributed to them by Lefebvre. For example, many of the old monuments were nothing more than the architectural and urban codification of a deeply hierarchical, unjust and authoritarian social and political order. Not to mention the baroque monumentality of Haussmann's Paris, that was produced by policies of social and spatial purification of the centre of Paris, to the detriment of the lower classes. Correspondingly, it is possible to find numerous positive representations of contemporary mobility as a symbol of freedom and emancipation, both at class and gender levels.

Such a perspective on the contemporary city is deeply rooted in the urban debate in the West, and has significant effects on the way we understand and govern it. In the United States, the condemnation and demonization of sprawl and suburbs commonly perpetuated by scholars (e.g. Davis, 1990; Duany, Plater-Zyberk and Speck, 2001; Silverstone, ed., 1996) and policy-makers prevented them from grasping the complexity and diversity that certainly characterizes the American suburbs, in terms of social and ethnic composition, built environment and lifestyles. Only a small number of more recent studies have attempted to account for this complexity (Nicolaides and Wiese, eds., 2006; Archer , Sandul and Solomonson, eds., 2015).

In Italy and Europe, the myth of the city of the past is even more deeply rooted. In the German context, Thomas Sieverts (2003) argues that the myth of the compact city of the past prevents us from correctly

understanding and designing peripheries, i.e. the living space of most people. For this reason, he focuses his attention on the analysis and design of the Zwischenstadt, or in-between city, that is, that hybrid mixture of city and countryside which is one of the main features of most suburban areas. On a similar slant, Rem Koolhaas speaks of the historical centres of the past as symbolically strong apparatuses that are now completely inadequate to support articulated and complex urban systems. And yet, their cultural and symbolic weight prevents the 'new city' from being understood and designed for what it is (1994, pp. 1248-9):

"Identity centralizes; it insists on an essence, a point. Its tragedy is given in simple geometric terms. As the sphere of influence expands, the area characterized by the center becomes larger and larger, hopelessly diluting both the strength and the authority of the core; inevitably the distance between center and circumference increases to the breaking point. In this perspective, the recent, belated discovery of the periphery as a zone of potential value —a kind of pre-historical condition that might finally be worthy of architectural attention— is only a disguised insistence on the priority of and dependency on the center: without center, no periphery; the interest of the first presumably compensates for the emptiness of the latter. Conceptually orphaned, the condition of the periphery is made worse by the fact that its mother is still alive, stealing the show, emphasizing its offspring's inadequacies. The last vibes emanating from the exhausted center preclude the reading of the periphery as a critical mass. Not only is the center by definition too small to perform its assigned obligations, it is also no longer the real center but an overblown mirage on its way to implosion; yet its illusory presence denies the rest of the city its legitimacy."

In fact, consolidated representations of historical cities and of contemporary suburbs strongly inhibit our ability to interpret and design peripheries. Augé's book certainly belongs to this type of polarized utopian/dystopian representation, and is widely used by architects and planners to describe the contemporary city in opposition to the city of the past. My thesis is that the so-called non-places (i.e. mobility infrastructures, shopping centres, multiplexes, service stations, etc.) that the French scholar speaks about and that are strictly connected to the new mobility networks play the role of 'squares' – understood as the traditional places of urban sociality – of the contemporary city. However, while the debate on the dialectics between the centre and the periphery is now quite consolidated, that on the relationship between traditional public spaces/mobility infrastructures and the new social spaces on the periphery is much less developed.

3. THE RHETORIC OF 'NON-PLACES': A WAY OF LOOKING THAT OBSTRUCTS OUR VIEW

Our inability to understand the role and potential that so-called 'non-places' assume in contemporary society determines a more general incapacity to grasp the demand for sociality that exists in the periphery. What is it that obstructs our gaze and inhibits our planning? According to Sieverts, the persistence of the 'myth' of the old town is responsible. From Europe to the United States, suburbs and suburban areas are generally ostracized, because they do not fit with the traditional and stereotypical image of the city. To be seen in this way, a city must correspond to the urban canons of density, of mixed-use, of a certain relationship between solids and voids. These canons, codified in Jane Jacobs's urban theory and easily found in European and North American cities before the First World War, prevent us from considering as a 'place' whatever does not conform to them. From this perspective, only the square and the street possess full dignity as public spaces. Koolhaas, as we have seen, maintains that the centre, with its symbolic weight, continues to orphan the periphery and prevent us from appreciating its real importance and relative weight in contemporary urban systems. However, his analysis, just like Sieverts's, limits itself to providing an overview of the periphery as a whole without considering its social spaces. This consolidated view of traditional public spaces as the only legitimate social spaces of our cities has strong negative implications for the ways in which contemporary spaces are regulated at a functional, infrastructural and performance level, and designed at an architectural and social level.

Despite the recognized importance of shopping centres in contemporary society these spaces continue to be considered by many the enemies of the retail trade, the 'bad giants' who close the shops of the town centre. Polemicists of the 'small shops closing syndrome' do not acknowledge the facts that the majority of the population has been living in the suburbs for some time now, and that many lack the resources to go shopping in the city centre. However, in the United States, this rhetoric has been swept away by the advent of electronic commerce and by the subsequent phenomenon of 'dead malls'. Now that shopping centres are disappearing, their loss is also being lamented. These spaces, after all, have enjoyed considerable importance in the social and cultural history of tens of millions of Americans (Kurutz, 2017). The rapid evolution of e-commerce could quickly make Italian and European shopping centres obsolete as well. The fact remains that these centres have been and still are exclusively regulated as consumption spaces. For example, the legislation in force in Tuscany, drawn up on the basis of the national framework legislation, sets out the number of parking spaces that must be provided in relation to the selling surface. It also limits the number of large shopping centres that can be built. However, it does not give any guidance about the range of public and private functions that should be realized, the accessibility that should be provided for the various modes of transport (cycling, walking, driving, public transit), the necessity of creating some spaces of an exclusively public nature and that of providing adequate urban furnishings (such as seating areas and the like). For this reason we should rediscover today Victor Gruen's lesson, get rid of our prejudices on the suburban world and on their collective, most often privately owned, facilities. The Austrian-American architect, known as the inventor of the American mall, conceived his commercial suburban outlets as vibrant collective spaces, comfortably usable with their abundant seating, careful and meticulous landscaping, and ample space for collective and social activities (Gruen and Smith, 1960; Hardwick, 2004). Although privately owned and albeit not embedded in the urban fabric of the historic city, Gruen's commercial centers were real community centers and hosted concerts, festivals, county fairs, political events: they were much better than the anonymous and gloomy non-places imagined by Marc Augé.

Similar considerations, taking into account the difference in scale and the smaller radius of influence, can be made in relation to the planning of petrol stations. Although most of the petrol stations are exclusively technical facilities, some of them may well become, as recent research has demonstrated, small centres for the local community (Giovannoni, 2017). Urban planning and fuel distribution plans should acknowledge this reality and rework their regulations to recognize the difference between facilities providing simple petrol pumps and car washes, and the integrated service stations that could have a wider role in serving local communities. For the latter, functional hybridization with complementary social and commercial activities should be encouraged, and better accessibility from the surrounding residential areas should be ensured.

This reconceptualization should involve a much more varied set of 'types' of new public spaces, which would include outlet villages, airports, multiplex cinemas, service stations, large car parks and sports facilities. Outlet villages could be thought of as gates that connect the highway network along which they are located with the surrounding regions. By integrating commercial functions with tourist and social services, the economic and social benefits of these large magnets could be distributed over wider regions. The airports, usually conceived as negative elements that reduce the real estate values of the surrounding areas, could be transformed into generators of positive externalities, as places of attraction in which to dine at night while observing the air traffic, to visit exhibitions and commercial spaces, to avail of personal services, and to participate in political and social events.

The transformations I have described above are in part already underway. However, they are almost exclusively led by big economic actors, without any capacity for control and direction by national and local political and administrative bodies. As I have tried to demonstrate, it will only be possible to develop an adequate regulatory framework and reach design potentials once the annihilating and obscuring rhetoric of the non-place has been overcome. This would involve deconstructing the consolidated and dominant

narratives on this subject and basing our knowledge of these spaces on accurate socio-anthropological work that would allow us to grasp and appreciate their social relevance and functionality.

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SOCIAL AND SPATIAL RESILIENCE IN THE ADAPTIVE REUSE OF INDUSTRIAL HERITAGE: A FRAMEWORK FOR EVALUATION

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ABSTRACT

Following the Industrial Revolution, the world underwent a profound transformation that reshaped the spatial and social structures of cities. Urban environments were compelled to adapt rapidly to this shift, leading to the emergence of areas that became functionally obsolete or disconnected from the evolving urban fabric. Over time, many of these underused or abandoned zones failed to reintegrate effectively into the city, resulting in passive, disconnected spaces. In contemporary cities, where transformation and continuity coexist, the ability to renew while preserving historical traces has become increasingly significant. Within this context, industrial heritage sites—integral elements of cultural heritage—emerge not only as remnants of past production cultures but also as critical environments for sustaining urban resilience and rebuilding spatial and social cohesion.

This study explores how the concepts of Industrial Heritage, Adaptive Reuse, Publicness, and Sustainability interact to strengthen resilience within urban regeneration processes. It argues for a holistic approach that considers social, spatial, and cultural dimensions of resilience together. The proposed Resilience Assessment Framework for Adaptive Reuse extends beyond conventional preservation principles by incorporating parameters such as community interaction, inclusivity, and place identity. Thus, industrial heritage sites are conceptualized not merely as re-functionalized architectural assets but as socially resilient public domains that contribute to urban sustainability.

The research is structured around the guiding question: “What are the key criteria that enhance social and spatial resilience in the adaptive reuse of industrial heritage, and how can they be evaluated?” Methodologically, the study employs a comparative analysis of selected adaptive reuse projects from diverse geographic contexts. These cases reveal how design strategies, management models, and user participation mechanisms operate within the transformation of industrial structures into public spaces. Each case is analyzed under the categories of architectural identity and conservation strategies, participatory design and operation processes, inclusivity and accessibility, and public space and green integration. These analytical dimensions aim to assess how industrial heritage contributes to the urban context and to what extent it reinforces elements of urban and spatial resilience.

Based on these findings, the study introduces a comprehensive Resilience Evaluation Model for Adaptive Reuse. The model proposes a set of measurable indicators encompassing physical, social, and cultural aspects to assess interaction levels, public productivity, and community resilience throughout the transformation process. Applying this framework to selected cases enables the identification of strengths and weaknesses in existing projects and offers early-stage insights for future interventions. As such, the proposed model functions as a practical guide that can be utilized in both architectural design and urban

policy-making. It highlights the importance of integrating resilience-based strategies into conservation practices, emphasizing participatory and adaptive management approaches that promote the sustainability of urban heritage.

Ultimately, this research positions the adaptive reuse of industrial heritage not merely as a means of preserving the past but as a strategic tool for constructing more resilient and inclusive cities. The integration of heritage sites into everyday urban life strengthens collective identity and fosters sustainable urban paradigms for future transformation projects. The proposed framework thus contributes to the discourse on urban resilience by demonstrating how industrial heritage can act as an active component in the social and ecological continuity of cities—linking preservation with adaptation and resilience.

KEYWORDS: Industrial Heritage, Adaptive Reuse, Urban Publicness, Bottom-up Design, Resilience.

1. INTRODUCTION

The transformation in cities accelerated after the Industrial Revolution. Global change has necessitated this transformation for cities. This speed of change forces cities to be resilient not only to physical events but also to economic, social, and environmental circumstances. At this point, heritage sites, which are highly significant for urban memory, are being prioritized and re-evaluated within a conservation framework. The approach of updating heritage sites by adapting to what exists instead of demolishing them is particularly important for industrial heritage sites within the city. Industrial heritage sites are not merely reflections of production culture for the city. These areas can keep the collective memory alive and offer opportunities for sustainable transformation for transmission to future generations.

Adapting industrial heritage sites to the present through adaptive reuse is a common conservation strategy. In this approach, priority is given to architectural adaptation and physical conservation. However, the long-term success of a transformation within the city does not solely depend on architectural solutions. It is also linked to the potential for physical, social, economic, ecological, and cultural resilience. In some large-scale adaptive reuse projects, resilience elements are not adequately addressed, leading to their activity and inclusion in the city being temporary. Especially in projects where the design process is driven by top-down decisions, and where bottom-up user needs and the participatory audience are overlooked, it can be observed that the spaces transform into places not embraced by the community and become idle over time. Such situations damage the integrity of the city; they can lead to imbalances in the regional economy, thus weakening physical and social resilience. This study addresses this critical problem.

The purpose of this study is to present a conceptual assessment model by examining the relationship between the concepts of resilience and conservation during the adaptive reuse process of industrial heritage. An inquiry is produced regarding how social, physical, cultural, economic, and ecological resilience is shaped in the adaptive reuse process, which can support traditional conservation criteria. Within this framework, the concepts of industrial heritage and adaptive reuse are examined in relation to the concept of resilience through the themes of (i) interaction opportunities, (ii) inclusivity, (iii) location effect and environmental harmony.

The study's methodology involves an in-depth case analysis conducted on a single sample to test the conceptual framework. The adaptive reuse process of the Bursa Merinos Weaving Factory is a strong example representing the publicization and integration of a large-scale industrial heritage site into the city in Turkey. This example was examined using the “Resilience Assessment Framework for Adaptive Reuse - ARDAF - ADAPTIVE REUSE DURABILITY ASSESSMENT FRAMEWORK” developed in the research. The analysis was conducted by scrutinizing past and current written and visual data related to the project under the three thematic headings mentioned above. These headings were classified based on the extent to which resilience criteria influence conservation approaches and to ensure they could be analyzed in more detail.

Supporting the interaction opportunities in the area demonstrates a success directly proportional to the conservation of the structure. Readings conducted in this context have shown that the criteria for historical conservation (material,structure and equipment elements) and adaptive reuse (function diversity,indoor function diversity-activity diversity) physically preserve the structure and strengthen interaction opportunities in the area. The historical conservation criteria are established to evaluate the current condition of the structure, while the adaptive reuse criteria are established to assess the diversity of the work carried out in this field.

In re-functioned structures, the aim is to ensure that conditions such as disability, old age, childhood, economic disadvantage, and cultural difference do not prevent access to the space, and that everyone can be included in public use. Equality, accessibility, and participation in the spaces are designed within this framework. Evaluating all these requirements under the heading of Inclusivity (participatory design-bottom-up design – governance and included businesses-transportation-accessibility) aims to make the contribution to economic and social resilience more detailed and measurable. Accessibility criteria were chosen to assess whether users of all profiles are included in the area, and transportation criteria were

chosen to evaluate how much access to the area and parking spaces affect usage. Establishing the measurability of (Bottom-up design), Participatory design, and governance-included businesses represents a significantly important point within the scope of this study. In the adaptive reuse process, the inclusion of local administration, NGOs, local people, and associations in the design, conducting various studies to gather their opinions, establishing joint management in subsequent processes, and making participation sustainable by users in the area, all aim to make the contributions of the preferred approaches measurable in the context of social resilience to the city. The criteria for governance-included businesses, in turn, aim to make the support provided to the city in an economic sense measurable. The suitability of the area for temporary use or free event plans and the implementation of various rental policies in the area constitute the measurability criteria.

In adaptive reuse projects, transforming the renewed structure into a public space that is integrated within the city is a frequently preferred approach to ensure its adaptation to the environment. This rapid adaptation of the area to the city and its transformation into an active space for citizens ensures the long-term use of the structure. To make this situation measurable, the criteria considered include the location effect and environmental harmony (contribution to inner-city settlement - green space - usage flexibility), the diversity of public spaces, and the criteria for green space integration during the publicization of the area. Simultaneously, the usability of the building area during risk situations is aimed to contribute to the formation of assessment criteria for location effect and environmental harmony.

In line with the findings obtained, the proposed ARDAF - ADAPTIVE REUSE DURABILITY ASSESSMENT FRAMEWORK aims to observe the resilience level of industrial heritage adaptive reuse projects based not only on conservation principles but also on parameters such as community interaction and inclusivity. This pilot study aims to present an applied guide to architectural practice and urban policy production, emphasizing the necessity of addressing heritage not solely with a conservation focus but also with an urban resilience-based approach.

2. CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

Heritage, in its most fundamental sense, is the totality of tangible and intangible values transferred from the past to the present, which are desired to be carried into the future. These values form a society's collective memory and identity (Lowenthal, 1996). However, the scope under the heading of heritage has changed historical processes. This definition, initially limited to monumental and distinguished structures, broadened over time to include structures reflecting the daily life practices of ordinary people, social memory, and technological development, thus falling under the umbrella of cultural heritage (Kuban, 2000). The concept of cultural heritage is summarized by Relph as follows: "Cultural heritage is accepted as a dynamic asset that strengthens a place's identity (place identity) and sense of belonging, while increasing inclusivity across social strata (Relph, 1976)."

"Industrial heritage, as a special category of cultural heritage, expresses the entirety of tangible and intangible values reflecting the production methods, technological advancements, and social structure of industrial societies. Factory buildings, power plants, transportation infrastructure, warehouses, worker housing, production techniques, work cultures, and elements of social memory that emerged with the Industrial Revolution are evaluated within this scope" (Cossons, 2012; Douet, 2016). With this perspective, industrial heritage not only documents the architectural and engineering achievements of a specific lived process but also holds a significant place in the formation of urban development processes, socio-economic transformations, and cultural shaping. Definitions made by UNESCO, ICOMOS, and especially the International Committee for the Conservation of the Industrial Heritage (TICCIH) emphasize the concept's importance across different dimensions. TICCIH assesses industrial heritage as a totality of tangible remains related to production, energy, and transportation systems, along with the cultural and social values accompanying these structures. This approach includes not only singular structures but also production landscapes and collective memory (TICCIH, 2003).

Industrial heritage and conservation approaches in this field, which appeared in their modern sense in the 1950s, began to gain more prominence in international studies starting from the second half of the 20th century. Here, industrial heritage is addressed beyond a preservation approach that merely recalls the past; it is seen as a part of sustainable development, urban transformation, and social integration approaches. The evolution of industrial heritage conservation approaches is a result of accepting the architectural, technological, social, and scientific value of these structures (ICOMOS, TICCIH 2003). According to Yavuz: "The philosophy of conserving idle or disused industrial structures necessitates bestowing a new social and economic function upon the structure, beyond merely sustaining its physical presence. This strategy is called adaptive reuse (Yavuz, 2011)." Plevoets and Cleempoel hold that: "Adaptive reuse aims to adapt the existing structure to contemporary needs by preserving its authentic character and material memory, thus ensuring the structure's longevity (physical durability) (Plevoets and Van Cleempoel 2019)." Beyond physical conservation, re-functioned structures also contribute to urban memory. Adaptive reuse plays a crucial role not only as a conservation tool within current design principles but also in sustainable approaches. Transforming an existing building minimizes the significant environmental waste and high carbon footprint caused by demolition and reconstruction processes, thereby contributing directly to ecological resilience (Bullen, Love, 2011). The integration of the newly functional structure into the city also brings economic vitality to the idle area, supporting local entrepreneurship and employment. Consequently, the city's economic resilience is strengthened. These gains achieved through adaptive reuse in industrial heritage structures transform conservation practice from a static intervention into a dynamic urban strategy. In this context, adaptive reuse addresses the structure's historical identity, economic potential, and environmental values through a holistic approach, moving the process from a simple 'physical renewal' act to the construction of a multi-layered 'resilience' that forms the city's resistance mechanism against future risky situations and shocks.

Although the concept of resilience was first defined in ecology by C.S. Holling in 1973 (Holling, 1973, p. 17), it began to be integrated into the disciplines of architecture, urban planning, and the built environment starting from the mid-2000s. Especially following Hurricane Katrina and climate change discussions, a focus began to shift among architectural paradigms not only on "robustness" but also on "adaptation and recovery." Since the end of the 20th century, this concept has offered a dynamic framework that goes beyond the concept of sustainability in the field of urban planning and management. While sustainability approaches generally focus on resource conservation and longevity goals, the concept of resilience combines these goals with a city's ability to adapt, resist, and reorganize itself against economic, social, and environmental shocks and stresses (Walker et al. 2004, p. 5). With this multi-faceted conservation approach, the concept of urban resilience can manage the city's resistance and possible crisis situations most effectively. Where traditional conservation approaches generally revolve around a static and singular idea of "preservation," current urban studies have moved the concept of resilience to a central role (O'Connell 2015, p. 5; Dinçer 2006, p. 12).

In this context, re-functioned industrial heritage projects aim not only for the structure to survive physically but also to create a flexible and adaptive mechanism against changing environmental, social, economic, and cultural factors. Within the framework of this holistic approach, industrial heritage is examined with five basic resilience values, extending from physical strengthening to social solidarity networks. While physical resilience ensures sustainability against disaster risks through the structural robustness and material conservation of the structure, economic resilience defines the financial flexibility of the area against crises through operating models and rental policies. Cultural resilience, which preserves the space's place in collective memory, and ecological resilience, which is based on harmony with the natural environment, strengthen the project's environmental and identity context. Social resilience, which is one of the most critical dimensions, aims to increase the social interaction of the area through participatory governance models, ensure the continuity of use even during crisis periods, and strengthen the sense of belonging. The simultaneous evaluation of these five dimensions ensures that industrial heritage is addressed not just as a building stock but as an active system that enhances urban resilience. Thus, the transformation processes

of industrial heritage structures are planned to adapt to the potential situations of cities against future uncertainties and offer long-term use.

This section of the study provides a brief historical overview of how the concepts of urban resilience and industrial heritage are related, serving as an introduction to the research in line with the approaches between urban resilience and industrial heritage.

3. METHODOLOGY

3.1. Determining Resilience Criteria Related to Industrial Heritage

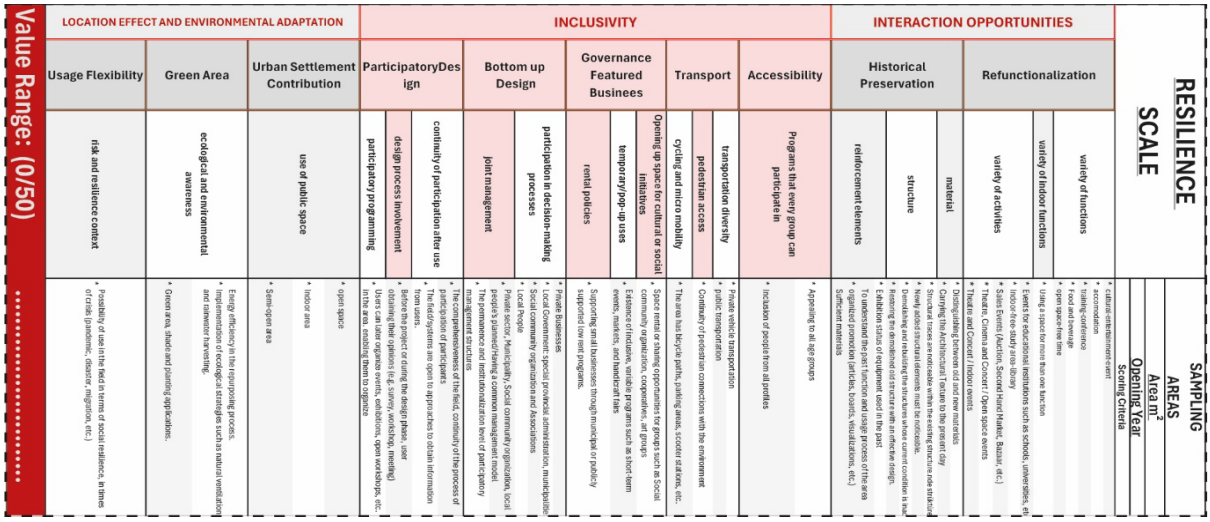
When the literature on the adaptive reuse of industrial heritage is examined, the evaluation criteria are generally seen to be gathered under traditional conservation headings, such as physical preservation status, architectural value, or economic return potential. However, a lack of a holistic approach that connects these classifications with the concept of "resilience," which expresses the resistance of the structure and its surroundings to current urban problems and risk situations, was identified. In this study, unique themes were created to fill this gap in the literature by combining the unique character of industrial heritage with the basic components of resilience theory (adaptation, flexibility, social participation). In the formation process of these themes, the concept of resilience was addressed not only as structural robustness but with a perspective that questions how the heritage area, along with its social, cultural, and ecological layers, holds onto the city together with its physical and economic layers and new examination groups specific to the heritage area were defined.

The contribution of re-functioned industrial heritage projects to urban resilience over a long period has become measurable through the social, spatial, and environmental relationships the structure establishes with the urban system, moving beyond traditional conservation approaches. Within the entire framework, a scoring system of 1 if the mentioned value is present/used and 0 if the value is not used/absent was adopted. In analyzing the ARDAF-ADAPTIVE REUSE DURABILITY ASSESSMENT FRAMEWORK, during the first stage of the model's formation process, it was primarily examined based on traditional conservation principles. Subsequently, a pool of indicators was created by including numerous subheadings derived from international conservation charters and resilience literature into this framework. However, during the design of the methodology, it was observed that many of these subheadings had weak testability in case analysis, repeated each other, or could cause measurement deviation by yielding similar results. For this reason, in order to make the analysis process clearer and more applicable, parameters exhibiting similar characteristics were simplified and grouped. The three main classification groups determined in the study's method design—Interaction Opportunities, Inclusivity, and Location Effect and Environmental Harmony—are umbrella concepts that emerged by systematizing a large number of technical parameters obtained from the literature review within the context of resilience theory.

When the industrial heritage literature is examined, the success of structures is seen to be measured through the balance of "functional transformation" and "historical conservation." However, from a resilience perspective, merely physically preserving a structure is not sufficient; the connection it establishes with the user is also critical. Therefore, sub-parameters in the literature such as "function diversity, material conservation, structural legibility, and equipment elements" were unified under the heading of "Interaction Opportunities," as they represent the physical and cognitive connection the structure establishes with the user. Similarly, in studies on social resilience, the concepts of "accessibility," "participatory management," and "economic affordability" were often found to be addressed separately. Furthermore, it was observed that in the publicization process of industrial structures, these elements do not operate independently: those who cannot participate in management cannot fully own the space, and economic participation does not occur where physical access is lacking. For this reason, social and economic parameters such as "participation in decision-making processes (bottom-up)," "transportation diversity," "opening space for local businesses," and "rental policies" were grouped under "Inclusivity," a single, holistic umbrella. Finally, the contribution of an industrial heritage to urban resilience is not limited solely to the interior of the building. Macro-scale indicators in the literatüre such as "urban integration," "green

space usage," "ecological sustainability," and "public space fiction" define the structure's relationship with its environment. Since the socio-spatial impact and environmental performance of the structure in its region cannot be separated, these parameters were synthesized under the heading of "Location Effect and Environmental Harmony." This group was created to measure the ecological and spatial resilience of the project. The evaluation items are presented in (Table 1.).

Table 1. "ARDAF-ADAPTIVE REUSE DURABILITY ASSESSMENT FRAMEWORK



In conclusion, deviations caused by the abundance and unclassified nature of the indicators determined in the initial stage of the analysis process were prevented. Firstly, indicators were simplified under these three umbrella headings. This increased the clarity of the model and allowed for the evaluation of industrial transformation projects within a clearer framework. To prevent indecision in scoring, these three headings were directed to address each situation individually and measure whether it was contained within the structure.

3.1.1. Interaction Opportunities: Criteria for Physical, Cultural, and Social Resilience

"Interaction Opportunities," which defines the spatial and experiential bonds established by industrial heritage structures with the user, directly affects the potential of the area to be included in public life and urban resilience. The foundation of this interaction in the city is laid by the physical resilience and historical conservation approach that ensures the integrity of the structure and the legibility of its architectural language, which recalls the past production culture. In this approach, which is structured through material, structure, and equipment elements; making old and new materials distinguishable supports the continuity of the architectural texture and physical resilience (Plevoets, Van Cleempoel, 2019), while the strengthening and reuse of the existing load-bearing system make the engineering heritage visible and sustain structural integrity (physical resilience). In addition to physical conservation, the exhibition of equipment used in the past and the use of informative elements strengthen cultural resilience by establishing a cognitive bond between the user and the structure's past (Köksal, 2004). The social dimension of interaction is provided by the functional diversity gained through the adaptive reuse project; multiple uses such as cultural, educational, entertainment, and food & beverage encourage different groups to come together, thereby increasing social resilience (Jacobs, 1961).

3.1.2. Inclusivity: Criteria for Economic, Social, and Physical Resilience

Inclusivity refers to the design of the industrial heritage area to be accessible, usable, and representable by individuals of all ages, genders, income groups, and physical abilities. This is ensured not only by physical

dimensions such as Transportation Diversity and Pedestrian Access, but also by the inclusion of economic participation and cultural representation processes. This approach forms the foundation of the adaptive reuse project's economic, social, and physical resilience. Supporting sustainable transport types such as Transportation Diversity, Pedestrian Access, and bicycle and micro mobility addresses the basic physical dimension of inclusivity, facilitating access to the area and contributing to physical resilience.

Today, the most critical dimension of inclusivity is the participation provided by the design approach called bottom-up design. The design process, which works with the area's users starting from the local population instead of proceeding solely with top-management decisions during the design phase, supports social and cultural resilience while also making a significant contribution to economic resilience for the city. Subsequently, the continuation of participation during the area's usage process contributes to participatory design. “Mechanisms such as the continuity of post-use participation (bottom-up) strengthen social resilience by guaranteeing the project's ownership by the community (Arnstein, 1969; Sanoff, 2000).” Furthermore, Design Process Participation and Participatory Programming (users organizing events on their own initiative) ensure the production of programs that every group can be included in. Meanwhile, businesses included in the area (NGOs, cooperatives, art communities) and flexible rental policies (publicly supported low-rent applications) define the area's capacity to support local production and employment. “With temporary/(pop-up) uses, this approach increases economic resilience by providing flexibility against economic crises (Bullen, Love 2011).”

3.1.3. Location Effect and Environmental Harmony: Criteria for Ecological and Social Resilience

Location Effect and Environmental Harmony express the relationship that the industrial heritage building area establishes with its surrounding environment at a physical, social, and ecological level. Public spaces created through adaptive reuse projects rapidly adapt into the city regarding their compatibility with and contribution to the environment. The designed public spaces refer to the way open, semi-open, and closed areas are handled together in terms of the structure's user interaction and potential for socialization. The balanced structuring of this combination strengthens the city's social integration and social resilience by supporting the spatial and user diversity of the area.

Studies are organized within these newly designed public spaces to increase the ecological performance of the structure. Open-air activities are planned to increase green space use within the city. Environmentally friendly approaches such as natural ventilation, rainwater harvesting, and the use of renewable energy are included in the design. Green space arrangements and planting activities support Ecological resilience by increasing environmental comfort and indirectly contribute to Social Resilience. At the same time, the use of these organized areas in potential risk situations supports crisis management by offering solution-oriented spaces to the city.

3.2. The Necessity and Limitations of the Assessment Guide Framework

Studies in the field of industrial heritage primarily focusing on physical conservation or addressing resilience parameters in singular dimensions result in a methodological gap in measuring the holistic impact of transformation projects on the city. To fill this deficiency, the "ARDAF - ADAPTIVE REUSE DURABILITY ASSESSMENT FRAMEWORK" has been developed. The necessity of this model in the adaptive reuse process stems from its orientation towards strengthening resilience against current urban conditions and future risk situations. Parameters that enhance urban resilience in this area have been identified and presented within this framework to enable assessment. Thus, an attempt has been made to present a scale suitable for guiding the construction phase or the continuity of the usage process. To test this unique theoretical model, a qualitative research method and a single case study strategy have been adopted for the time being. The Bursa Merinos Weaving Factory, chosen as the case, created a suitable sample for testing

the framework's social resilience dimension in particular, thanks to its scale, multi-functional structure, and the critical ground provided by its management model.

This analysis, conducted using secondary data and literature sources, proves the applicability of the framework. However, the study's current limitation, single-sample analysis, is planned to be expanded with comparative studies that will include domestic and foreign samples in the ensuing processes. In this study, Turkish examples to be used for comparative analysis were selected in line with the framework's evaluation over the case and its contribution to the example. For the future stages of the study, it has been decided to select the Izmit Seka Paper Factory, Hasanpaşa Gasworks, Çubuklu Silos, Izmir Gas Factory, and Santral Istanbul examples and use a comparative analysis method.

4. CASE STUDY: BURSA MERİNOS WOOL WEAVING FACTORY

Figure 1. Bursa Merinos Factory Old Version Figure 2. Bursa Merinos Factory New Version

The Bursa Merinos Wool Weaving Factory, one of the most important examples of the industrialization movements that began in the early Republican period in Turkey, is one of the country's prominent industrial heritage structures. The factory, constructed in 1933, was founded in 1935 and opened by Atatürk on February 2, 1938. Factors such as the breeding of imported merino sheep, the ease of raw material procurement, the abundance of water resources, transportation opportunities, and energy potential were influential in choosing Bursa. Thanks to this potential, it quickly became a factory supplying the wool fabric needs of the Middle East and the Balkans. For Turkey, it is among the pioneering projects in the industrialization process.

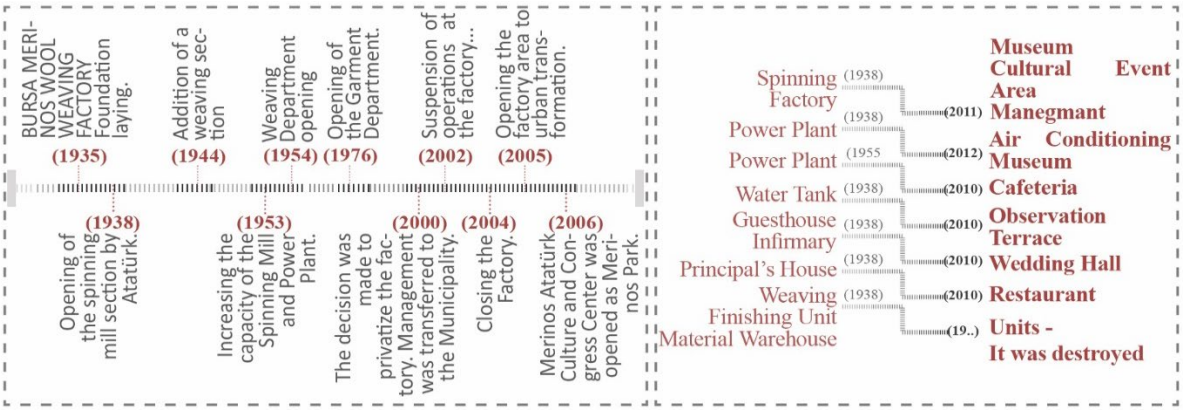
Beyond being merely a business center since its establishment, the Merinos Factory reflected the "self-sufficient industrial complex" model of the period with its lodgings, nursery, school, dining hall, social facilities, cinema, and sports areas. With these features, the factory contributed to the social life of its employees alongside production work and became an important component of Bursa's urban identity.

Architecturally, the factory, located on a large area of 404,372 m^2 , includes a spinning mill, weaving workshop, warehouses, a power plant, a cooling tower, and various social facilities. The buildings exhibit the typical architectural character of the early Republican period, such as reinforced concrete systems, the use of sawtooth roofs, horizontal window arrangements, and Art Deco influences. This architectural approach is an indicator of the modernization ideology reflected in the space.

The factory expanded with additional buildings between 1940 and 1970, and its production capacity and social living area were strengthened by the addition of a garment building, lodgings, bachelor pavilions, and social amenities. During this process, the factory not only produced fabric but also became a significant provider of Bursa's energy needs. However, due to changing economic conditions and technological inadequacies, production gradually decreased after the 1980s, and operations were halted in 2002. Workers' advocacy developed as a result of the unity and solidarity among the employees, and the concept of unionization emerged. The first worker unions were established during this working process. Although these unions and worker communities united against the closure of the factory and prolonged the process

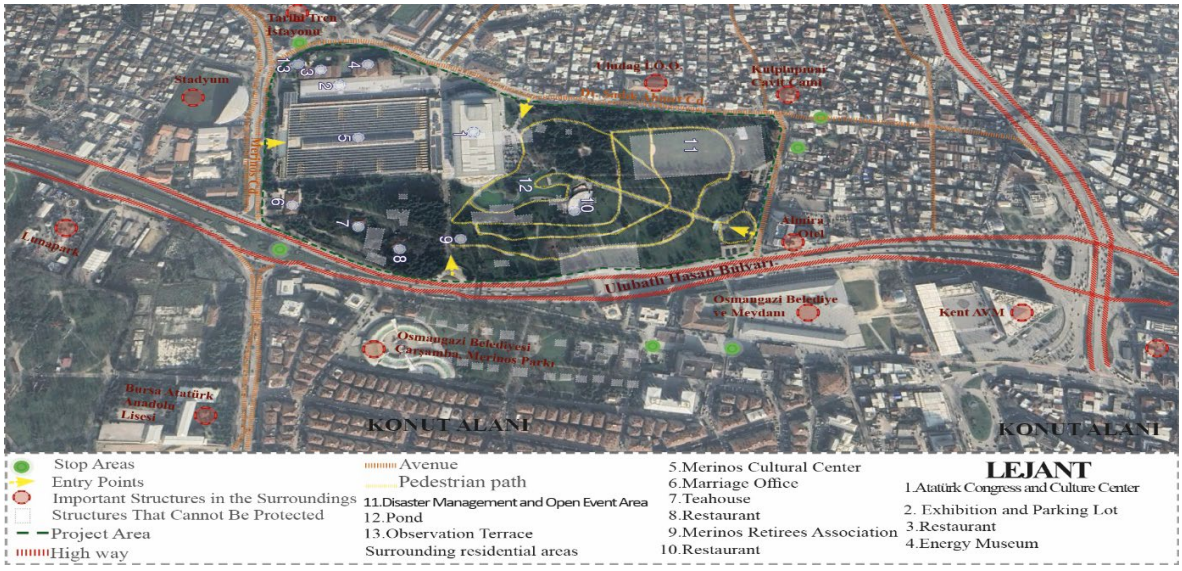
for a while, it could not be prevented, and the factory was completely closed in 2004. This situation brought up the discussion of how the structure, which had lost its function, would be evaluated on an urban scale. During this process, workers and worker families living nearby were asked what they wanted to see in the re-functioned factory area, and their approaches were taken into account in the development.

Table 2. Time Diagram Table 3. Repurposed Units



In 2000, by the decision of the High Council of Privatization, the factory area was transferred to the Bursa Metropolitan Municipality for cultural, artistic, and recreational use. As a result of the transformation project that started in 2005 , the factory and its surroundings were re-functioned; it began serving as the Merinos Atatürk Congress and Culture Center and Merinos Park in 2006.*(Table 2. Time Diagram)* Within this transformation, the spinning mill building was restored and gained the function of a culture center ; institutions such as the textile museum, migration history museum, and energy museum were opened, and public function areas such as exhibition halls, concert venues, wedding halls, and a library were also added. In addition, a park area of 208,000 m^2 was organized, providing a significant green space in the city center.

Positive results were achieved during the adaptive reuse process of the project area, particularly in terms of social sustainability. A central, large area that was likely to become idle after the factory became dysfunctional was brought back into the city's cultural and social life ; a public space open to the access of different age and social groups of the public was created. With concerts, exhibitions, festivals, and educational activities, the area meant not only a physical transformation but also the reactivation of social use and social sustainability.



Figüre 3. Merinos Factory and environmental analysis

Along with this process, the transformation brought some debates with it. A significant portion of the weaving buildings and original production equipment, reflecting the fundamental character of the industrial heritage, could not be preserved; originality was partially lost in the facades and other structural details. (Table 3.) This situation leads to criticism when compared with international criteria for the conservation of industrial heritage. Consequently, although the Merinos example achieved significant gains in terms of social sustainability, it carries some deficiencies in terms of conserving the technical and original values of industrial heritage. The analysis evaluated the Bursa Merinos Weaving Factory according to the guide criterion framework created. Based on the scores and findings obtained, the strong and weak aspects of the project were determined. The analysis findings were evaluated under the main headings of the framework. (Table 1.)

Tablo 1. ARDAF-ADAPTIVE REUSE DURABILITY ASSESSMENT FRAMEWORK- Bursa Merinos Factory

RESILIENCE SCALE			SAMPLING AREAS	BURSA MERİNOS FABRİKASI
			Area m^2	314.569m^2
			Opening Year	2006
			Scoring Criteria	
INTERACTION OPPORTUNITIES	Refunctionalization	variety of functions	* cultural-entertainment-event	1
			* accomodation	0
			* training-conference	1
			* Food and beverage	1
			* open space-free time	1
		variety of indoor functions	* Using a space for more than one function	0
		variety of activities	* Events for educational institutions such as schools, universities, et	0
			* Indoor-free-study area-library	0
			* Sales Events (Auction, Second Hand Market, Bazaar, etc.)	0
			* Theatre, Cinema and Concert / Open space events	1
			* Theatre and Concert / Indoor events	0
	Historical Preservation	material	* Distinguishing between old and new materials	1
			* Carrying the Architectural Texture to the present day	1
		structure	* Structural traces are noticeable within the existing structure.nde strüktüre	1
			* Newly added structural elements must be noticeable.	1
			* Demolishing and rebuilding the structures whose current condition is inac	1
			* Restoring the demolished old structure with an effective design.	0
			* Exhibition status of equipment used in the past	1
		reinforcement elements	* To understand the past function and usage process of the area organized promotion (articles, boards, visualizations, etc.) Sufficient materials	1
INCLUSIVITY	Accessibility	Programs that every group can participate in	* Appealing to all age groups	1
			* Inclusion of people from all profiles	1
	Transport	transportation diversity	* Private vehicle transportation	1
			* public transportation	1
		pedestrian access	* Continuity of pedestrian connections with the environment	1
		cycling and micro mobility	* The area has bicycle paths, parking areas, scooter stations, etc.	1
	Governance Featured Businees	Opening up space for cultural or social initiatives	* Space rental or sharing opportunities for groups such as Social community organization, cooperatives, art groups	0
		temporary/pop-up uses	* Existence of inclusive, variable programs such as short-term events, markets, and handicraft fairs	0
		rental policies	* Supporting small businesses through municipal or publicly supported low rent programs.	0
	Bottom up Design	participation in decision-making processes	* Private Businesses	1
			* Local Government: special provincial administration, municipalitie	1
			* Social community organization and Associations	0
			* Local People	0
		joint management	* Private sector, Municipality, Social community organization, local people's planned/Having a common management model	1
			* The permanence and institutionalization level of participatory management structures	1
	ParticipatoryDesign	continuity of participation after use	* The comprehensiveness of the field, continuity of the process of participation of participants	0
			* The field/systems are open to approaches to obtain information from users.	1
		design process involvement	* Before the project or during the design phase, user obtaining their opinions (e.g. survey, workshop, meeting)	0
		participatory programming	* Users can later organize events, exhibitions, open workshops, etc. in the area. enabling them to organize	0

LOCATION EFFECT AND ENVIRONMENTAL ADAPTATION	Urban Settlement Contribution	use of public space	* open space	1
			* Indoor area	1
			* Semi-open area	1
	Green Area	ecological and environmental awareness	Energy efficiency in the repurposing process. * Implementation of ecological strategies such as natural ventilation and rainwater harvesting.	1
			* Green area, shade and planting applications.	1
	Usage Flexibility	risk and resilience context	* Possibility of use in the field in terms of social resilience, in times of crisis (pandemic, disaster, migration, etc.)	1
Value Range: (0/50)				29

4.1. Interaction Opportunities (Physical and Cultural Resilience)

Interaction opportunities support the project's physical and cultural resilience outcomes. Strong cultural resilience has been provided in the city through the diversity of functions in the area. Supporting the indoor spaces in the structure with functions such as museums, congress centers, etc., has increased the capacity to transfer the structure's identity to the future. The conservation strategies implemented in the project have largely contributed to the structure's historical conservation and physical resilience.

Structure, material, and equipment elements were mostly preserved in the project. The strengthening and reuse of the original load-bearing system ensured that new functions in the structure could be implemented without disrupting the integrity of the load-bearing system. The use of old and new materials in a distinguishable manner supported the continuity and repairability of the architectural texture. The exhibition of equipment used in the past and the use of informative elements in the area strengthened Cultural Resilience by establishing a cognitive bond between the user and the structure's industrial past. However, the limitation of these informative memory elements to only the museum areas restricted the depth of the historical narrative in the structure overall.

4.2. Inclusivity (Social and Economic Resilience)

According to the assessment, the transformation project of the Merinos factory was found to be inadequate in terms of social resilience in the city. The finding that can be identified as the project's weakest point is that users and local people were not allowed to contribute to design decisions during the adaptive reuse process. This deficiency in the (bottom-up design) aspect resulted in insufficient solution proposals for users, thereby limiting the active usage status. This situation, coupled with the inadequacy of criteria for joint management and the continuity of post-use participation, made it difficult for the community to embrace the structure and negatively affected social resilience. Consequently, the lack of participation can limit the capacity to produce programs that every group can be included in the area.

Users who were not included during the design process later started to support participatory design as a result of the active use realized over time in the area. Contribution to economic resilience was provided through businesses included in the area (cooperatives, social enterprises) and (temporary/pop-up) uses, and the distribution of economic benefit was encouraged. Thus, the social resilience of the area within the city was strengthened.

Accessibility is another significant advantage of the area. Easy access is provided thanks to its central location and proximity to public transportation networks. This industrial heritage area, which has transformed into an urban space appealing to all ages, genders, and income sectors, also features suitable paths arranged for every user. Arrangements made for disabled access also support inclusivity. Consequently, with strong transportation opportunities and a central location, the area reaches a wide user base. Physical and social resilience are supported.

4.3. Location Effect and Environmental Harmony (Ecological and Social Resilience)

The spatial impact and environmental sensitivity created by Merinos in the urban context were examined, and strong findings were obtained in these dimensions. The factory area, located in the former industrial zone, created a strong location effect with its large green space (Merinos Park) and multi-functional structure. Public space usage in the area provided open, closed, semi-open spaces, and free access. Furthermore, it established an important socialization area in the city center, which increased the city's social quality of life and contributed to social resilience. A dense green texture was provided to this public area through park arrangements. Plant diversity was kept quite high due to climate compatibility. The size of the green area was highly effective in ventilating the dense residential fabric within the city. Additionally, small artificial ponds located within it created water-retaining areas in the city. These ecological and environmental sensitivity strategies (large green space integration) created resistance against urban environmental stress factors by providing microclimatic improvements. The area can offer a safe space for the city during risk situations (such as pandemics, migration, disasters, etc.) and provides the opportunity to rearrange the uses of its existing spaces during the crisis management process.

The Bursa Merinos Factory adaptive reuse project is a highly successful example in the city in terms of physical, cultural, and ecological resilience dimensions, demonstrating the potential of industrial heritage to transform into a sustainable urban area. However, the most critical finding of the analysis is the deficiency in the area of bottom-up design. The project's execution of the design process with a (top-down) governance model, thus weakening the social resilience dimension, particularly regarding participation and joint management criteria, represents a highly negative situation for the area. This situation shows that despite the structure's physical and ecological superiority, it harbors risks in terms of social ownership and long-term social continuity. This finding supports the fundamental thesis of the study: the long-term success of the adaptive reuse of industrial heritage structures depends not only on architectural and technical solutions but also on social resilience strengthened through participation. Design should be made by considering the five basic dimensions of resilience in conservation approaches. Evaluations will be discussed based on this pilot study conducted in line with all these approaches, and the assessment framework produced within the scope of the study will be critiqued.

5. EVALUATION

The core output of the study, the “ARDAF- ADAPTIVE REUSE DURABILITY ASSESSMENT FRAMEWORK,” addresses the transformation of industrial heritage not merely as an architectural adaptation but as a holistic system aimed at achieving five-dimensional urban resilience. This model, tested on the example of the Bursa Merinos Weaving Factory, successfully identified the managerial and social risk points of projects beyond their structural integrity by analyzing resilience outcomes through four main criteria: interaction opportunities, inclusivity, location effect, and environmental harmony.

The assessment provided by the guide framework in this case analysis determined the project's strengths and weaknesses. The project supports the city's physical resilience through its historical conservation strategies and preservation approach. Furthermore, preventing the structure's demolition and the design of a large green area maximized the project's contribution to ecological resilience. This finding supports the literature's thesis that the adaptive reuse of existing structures contributes directly to environmental

sustainability by reducing environmental waste and carbon footprint (Bullen, Love, 2011; Yavuz, 2011). Simultaneously, the functional diversity provided by interaction opportunities strengthened the structure's cultural resilience by transforming it into a public attraction center (Kuban, 2000).

In contrast, the most critical dimension of the discussion is the project's weakness in the area of social resilience despite its strong physical success. The lack of bottom-up design and insufficient participation in decision-making processes threaten the area's social ownership and long-term continuity. This situation aligns with the views of Jacobs (1961), who argues that monumental structures may remain socially fragile unless actively produced by the community, and Arnstein (1969), who criticized participation that remains merely at the level of information. Additionally, the economic structure's insufficient support for local use also limits the city's economic resilience.

In conclusion, the developed framework suggests evaluating industrial heritage projects as a multi-dimensional risk management tool, moving beyond mere architectural intervention. The analysis revealed that regardless of the level of physical and ecological success, the project's contribution to urban resilience remains incomplete unless social and economic resilience, supported by participatory governance, is ensured. In this context, the model offers a practical roadmap for establishing this balance by prioritizing economic resilience criteria—specifically, including businesses and rental policies—for future projects.

6. CONCLUSION AND RECOMMENDATIONS

This study addressed the adaptive reuse of industrial heritage as a holistic urban strategy, moving beyond mere architectural conservation. It aimed to fill the methodological gap in the literature by developing the "Resilience Assessment Framework for Adaptive Reuse." The analysis conducted on the Bursa Merinos Weaving Factory example revealed that despite the structure's physical and ecological success, it was unsustainable in the dimension of social resilience due to a lack of participatory governance. The study proves that projects cannot be considered successful in the long term, regardless of their physical quality, if local participation is not ensured, the local economy is not supported, and the process is not collaboratively managed with the user. Conversely, such deficient interventions create a risk of gentrification, leading to the space being invaded by certain groups, detaching from the city, and causing imbalances in the regional economy, thereby weakening urban resilience.

In this context, the study advocates a paradigm shift in architectural practice from a 'conservation-focused' to a 'resilience-focused' approach. It recommends that shared management models and economic strategies supporting local production be made a legal necessity. The current scope of the study, limited to a single case, is planned to be expanded in subsequent processes with comparative analyses of domestic and foreign samples having different scales and management models. This study has already facilitated the selection of domestic examples. Thus, the objective is to increase the universal validity of the developed framework, provide an original contribution to the literature, and enable this model to gain the quality of a standard guide in the construction of resilient cities.

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****Figure 1.-2. Bursa Merinos Factory* (Acces Date: 19/09/2025) https://encrypted tbn0.gstatic.com/images?q=tbn:ANd9GcRXl7DHzW_IrZmSfHVWsOcJO4xbIkFF86acSi5Dyl5mEXBrBs4gC6IMe20AWIZa7zAfh0&usqp=CAU

TWO INSTITUTIONS IN CONVEYING THE IDEOLOGY AND ARCHITECTURE OF THE REPUBLIC TO THE PUBLIC: HALKEVLERI AND ARKITEKT JOURNAL[1]

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ABSTRACT

Two Key Institutions in Conveying the Republic Ideology and Architecture to the Public: Halkevleri (People's Houses) and Arkitekt Journal

During its foundation and later in the single-party rule period, there were efforts to instill the ideology of the new Turkish Republic into the public. Halkevleri (People's Houses) became key institutions in conveying the ideology of the new regime, not only through their activities but also through their architecture. In 1930s Turkey, in the absence of widespread architectural literacy, these institutions played an undeniably important role in the public regard of Turkish architects and in establishing faith and respect for the architectural profession.

On the other hand, the Arkitekt Journal had a key role in communicating architecture as a concept to the public and shaping the culture of the 'new society', particularly through the articles that aimed to raise public awareness and opinion of Turkish architects and architecture.

Consequently, this article explores these two institutions, which played an important role in the creation of the 'new society', in juxtaposition.

KEYWORDS: Arkitekt Dergisi (Journal), Halkevleri (People's Houses), Zeki Sayar, The Republican People's Party in Turkey, Turkish Republic, The Ideology of the Republic, Modern Architecture, Architecture in Modern Turkey, the 20th Century Turkish Architecture.

[1] This article is based on the paper entitled 'Two Institutions in Communicating the Ideology of the Republic to the Public: Halkevleri and Arkitekt,' which was prepared in 2008 as part of the 20th Century Turkish Architecture course taught by Prof. Dr. Afife Batur in the Master's Programme in History of Architecture at Istanbul Technical University.

1. A BRIEF HISTORY OF HALKEVLERI

Halkevleri, meaning People's or Community Houses in Turkish (to be referred to as Halkevleri from here on), in line with their association with the single-party era and the rule of the Republican People's Party (C.H.P.), were established in 19 February 1932. However, their origins in thought and practice extend back to the 1910s and the foundation of Türk Ocakları (Turkish Associations or Centres in Turkish, referred to as Türk Ocakları from here on). Although both Türk Ocakları and Halkevleri were formed in response to a need at the time, they had a significant impact on the country's culture during the period they were active. (Çavdar, 1983 pp. 877-884)

During the final period of the Ottoman Empire, Türk Ocakları became centres where racist, Turkic nationalist and religious factions gathered.[2] (Çeçen, 1990 p. 99) Seen as the greatest obstacle to the organisation of Atatürk's public reforms, they were closed down in 1931. As the cultural climate in the country necessitated a new organisation without further delay, after examining different examples from around the world, a clear plan of action for establishing Halkevleri was put in motion. (Çeçen, 1990 p. 105)

Beyond official statements and rhetoric, Halkevleri were perhaps also responding to a necessity arising from the economic and social conditions of the period. The full effects of the 1929 Great Depression was beginning to be felt in Turkey; the Turkish currency lost value, agricultural product prices fell, and state intervention in the economy became a pressing issue as agriculture formed the basis of economic activity. (Goloğlu, 1938 p. 84) The crisis shook, and in a sense destroyed, the liberal economic policies that underpinned economic programmes, bringing nationalism back to the fore. In a sense, the inability of the ruling classes and their representatives to resolve problems at a concrete level necessitated the search for solutions at an ideological level. (Taner, 1968) A non-existent societal order was presented as if in existence in an ideal plan. The nationalism pursued by the government in the early 1930s, with its focus on linguistic and historical unity, is an example of this. Consequently, Halkevleri were founded in 1932, when the economic crisis reached its peak in the country. (Çavdar, 1983 p.879)

İsmet İnönü's speech on the first anniversary of the foundation of Halkevleri illustrates their purpose clearly: “Halkevleri are places where citizans can gather without difficulty, and where they can discuss matters concerning the country and the nation, especially the nation’s high cultural affairs, as they see fit, without any trouble…”[3] (Anonymous, 1945 pp. 3-12; Anonymous, 1963 p. 15) In other words, they were centres for informing the public daily about the principles of the Republican People's Party and how these were implemented in the country, therefore they were important institutions for spreading the party's ideology. (İnönü, 1935 quoted in Çeçen, 1990; Yeşilkaya, 2003 p. 63)

Despite their ties to the party, Halkevleri were kept separate from political identity. Member of Parliament Recep Peker was keen to stress in his 1932 speech that “Halkevleri are completely separate from the political structure of the Republican People's Party, completely removed from political work, but administratively attached to the party.”[4] (Peker, 1974 p. 9) Halkevleri played an important role in bringing the regime and the people together. However, the fact that they were seen as an organ of the Republican People's Party and that its administrators were party members meant that not all people could feel at ease in these institutions, or move and speak freely, and this caused significant unrest in some regions. (Çeçen, 1990 pp. 233-234)

During the early stages of adaptation to modern democracy and the republican regime, there were two attempts to transition to a multi-party system, however, measures were taken to counteract the political attempts by anti-republican factions to protect the republican regime and prevent a return to imperial order.

2 The second article of the constitution suggests that the Turkish Associations have a structure conducive to racism and religious intolerance.
3 İnönü's speech on the first anniversary of the opening of Halkevleri.
Original quote: “Halkevleri vatandaşların külfetsiz toplanacakları yer olduğu gibi, vatandaşların memleket ve millet işleri, bilhassa milletin yüksek kültür işlerini, düşündükleri gibi, zahmetsiz konuşabilecekleri bir yerdir…”
4 Recep Peker's speech
Original quote: “Halkevleri Cumhuriyet Halk Fırkasının siyasî bünyesinden büsbütün ayrı, siyasî mahiyette çalışmadan büsbütün uzak ve fakat idare noktasından fırkaya bitişik bir mahiyet arzederler”.

As the regime softened during the transition to democracy, attacks by anti-republican, pro-monarchy and reactionary groups on Atatürk's reforms and the organs of this ideology increased. (Çeçen, 1990 pp. 233-234)

The transition to a multi-party system brought along a more liberal political life. Groups with different views organised themselves by forming parties or associations. Within this new climate of freedom, some groups flocked to Halkevleri, while others distanced themselves. While their affiliation to a political party was not a problem during the single-party era, it became an issue with the transition to multi-party democracy. The poss that another political party could come to power caused a significant segment of the population to distance themselves from Halkevleri. (Ünlü, 1974 pp. 9-12; Çeçen, 1990 pp. 233-234)

Following the Democratic Party's entry into Parliament in the 1946 elections, Halkevleri became a significant topic of debate, particularly during budget meetings. (Çeçen, 1990; Yeşilkaya, 2003 p. 80) This is also proof that their connection to the party led Halkevleri to be perceived as an organ of the party. Discussing the issue in his article 'The Current State of State Buildings!', prominent architect and journalist Zeki Sayar reveals that some speakers drew attention to the inaccuracies and wastefulness in state construction projects during the budget debate in the Grand National Assembly and noted that the construction projects undertaken during the crisis years were not essential structures affecting public life, that they could have been postponed until a more suitable time, and that the millions spent could have been used for more profitable ventures. (Sayar, 1946a pp. 249-250) This is another indication that Arkitekt Journal played a key role not only in promoting architectural projects but also in keeping abreast of social issues. The unnecessary construction projects and wasteful spending were constantly brought up at parliamentary meetings and drew criticism; in addition, the Democratic Party adopted a stance against Atatürk's reforms and continually made concessions to reactionary elements.

Ultimately, Halkevleri and Köy Enstitüleri (another Republican institution), which were established by the Republican People's Party government after the founding of the Republic to elevate the cultural standards of the people, were converted into Köy Öğretmen Okulları (Village or Rural Teacher Training Schools) by Act 6234 on 27 January 1954. (Çeçen, 1990 pp. 257-258)

In his speech at the Istanbul Provincial Congress in 1962, İsmet İnönü stated that the former Halkevleri were not a branch or instrument of the Republican People's Party and that they should be merged with cultural associations to take on a new form. (Anonymous, 1963 p.3)

The Democratic Party government quickly abolished the legal presence of the two original institutions of the Turkish Reforms, Halkevleri and Köy Enstitüleri. That government was then brought to an end by the 27 May coup d'état, and subsequently, the reopening of these institutions, which played a key role in bringing Atatürk's principles to the people, was put back on the agenda. With the coming together of Atatürkists and former Halkevleri members, they resumed their activities after a 12-year hiatus. (Çeçen, 1990 pp. 257-259, 272) Halkevleri, which were closed again under the Associations Act in the period following the 12 September coup d'état in 1980, reopened for the third time in 1987.[5] (Kaplan, 1974 p. 131)

2. ARCHITECTURAL BACKGROUND OF THE PERIOD

The style of the 'Transition Period,' described by architectural historians as the 'First National Style', 'National Architecture' or 'Ottoman Revivalist Style' dominated the final period of the Ottoman Empire and the period leading up to the establishment of the Republic. (Batur, 1983 pp. 1379-1424) The determination to ensure that the ideological impact of the new regime does not diminish people's faith in it, that the public does not feel detached from their identity, essence, and history, as if they were living in a completely

5 Halkevleri, together with Türk Dil Kurumu (Turkish Language Association) (est. 2 July 1932) and Türk Tarih Kurumu (Turkish History Association) (est. 12 April 1931), established in quick succession, formed a tripartite reform. It is accepted that these institutions also functioned as provincial organisations. With the closure of Halkevleri, the 'research and compilation channels' of this triad were blocked. In a message published in 1971 on the anniversary of the foundation of Halkevleri, İsmet İnönü described his inability to prevent their closure as the greatest failure of his life.

different environment, led to the preference for a style that emphasises the historical aspect. This style can be interpreted as open to technological innovation, unafraid of experimentation, and characterised by a harmonious combination of these tendencies with the distinctive interpretations of historical elements used in the façade design of modern plans and operations. It was not favoured after the establishment of the Republic, particularly during the single-party period. In addition to ideological differences that undoubtedly played a key role in this shift, the 'Transition Period' style was also economically costly and, due to the length of the construction phase, not fit for purpose to meet the urgent need for building stock at the time. Overall, 'Modernism' was embraced by the state during the single-party period. (Tekeli, 1994 p. 53) The architectural counterpart of this ideology was the style known as 'Modern Architecture'[6] (Ünsal, 1939 pp. 60-62) and 'Rationalism'.

During the single-party era, it was crucial for the regime to make its presence felt and understood by the people in every corner of the country. The solution was to 'weave the country with an iron network,' which became the first and foremost public works project. As a result, railway stations and station buildings were constructed, and the State Railways were established. The railways ensured that the government's authority reached the entire country; 'in becoming accustomed to a contemporary and functional architectural language, station buildings played a modest but widespread role'. In every province reached by the railways, 'Republic Squares' were established, featuring Gazi Boulevards and Atatürk statues, representing the new regime, the 'nation-state,' in contrast to the old. In cities, as part of the 'minimum construction programme', buildings such as Gazi schools and government residences were constructed despite economic constraints to convey the regime's ideology to the public, to educate the people, and ensure smooth administration. Following the alphabet reform, the policy of educational structures of the 1930s, which housed the militant cadres of the reforms, was consciously implemented in the 1940s through Halkevleri and Köy Enstitüleri, with the aim of ensuring that all segments of the public learned New Turkish, which used the Latin alphabet, and that of instilling the cultural reforms in the public. (Batur, 1983 p. 1384) All these educational activities; Gazi schools, Halkevleri, Köy Enstitüleri, and their project competitions and applications were activities planned and supervised directly by the Republican People's Party, again, with the aim of spreading the regime's ideology and educating the public. (Bozdoğan, 2002 p. 104) An important publication that publicised these architectural design competitions to architects and the public was the Arkitekt Dergisi (Journal).

3. ARKITEKT JOURNAL AND ARCHITECTURE

Arkitekt Journal was founded by Zeki Sayar, Abidin Mortaş and Abdullah Ziya Kozanoğlu. The journal was published between 1931 and 1981. (Altıner, 2008) Having begun publication under the name Mimar, it was forced to change its name with the Language Reform in 1935. Zeki Sayar recounts that a letter from the General Directorate of Press had requested that the journal's Arabic name 'Mimar' be changed, and thus the word 'Arkitekt,' which is neither Arabic-Persian nor Turkish, was proposed.[7] The name Arkitekt was initially rejected by the General Directorate of Press, but was later accepted by the authorities after evidence was presented in the form of the Finnish journal Arkkitehti along with the argument that Finnish and Turkish both belong to the Uralic-Altaic language family. From 1935 onwards, it was published under the name Arkitekt. (Anonymous, 2013; Sayar, 1990 pp. 37-42)

Zeki Sayar marked that the key feature of the style sought in state buildings was its capacity to reflect the regime's ideology and character: "State buildings, regardless of their architectural style, must undoubtedly possess a certain character. We must seek this spirit in the architecture of buildings representing the state." (Sayar, 1944 p. 126) Abidin Mortaş, on the other hand, emphasised that official buildings should be structures that reflect the authority of the state and its level of 'culture' with the following words:

6 Quoted from Behçet Ünsal's lecture on 'Modern Architecture' broadcast on Ankara Radio…

7 Mimar (Arabic) An artist and scientist who designs and draws buildings and the physical environment and directs their implementation; a building and space designer. (Hasol, 2010 p. 323)

“Government residences come first among the official buildings that the state will have constructed in provinces and districts. These buildings, which represent state authority in every corner of the country and must inspire respect and loyalty in the public, must be dignified and serious in appearance and possess an architectural value commensurate with the cultural level of the republican state.” (Mortaş, 1944 pp. 250-252) [8] Bearing in mind that architects, as key figures in construction, shape buildings within the context of their own ideology in every period, the architectural style of Halkevleri, as structures intended to convey and spread the regime and party ideology to the public, became an important issue, along with other structures that served as symbols of the regime during the single-party period.

During this period, first and foremost, it was necessary to establish the professional identity of the ‘architect’. The process of selecting the jury members for the Zonguldak Halkevi project competition, as recounted by Faruk Galib, is a highly illustrative example of the degree of importance and value attached to the profession at that time. The jury members for the Zonguldak Halkevi project competition were: the leader of the People's Party and Halkevi, the Governor of Zonguldak, the Municipality, and civil and mining engineers. With the assistance of the Istanbul Halkevi, two architects were later able to join the jury: Samih Saim, Head of the Istanbul Architectural Association, and Faruk Galip, Architect and Fine Arts Representative of the Istanbul Halkevi Administrative Board. (Galip, 1933 p. 64)

The necessity of perceiving and accepting architecture as a profession was conveyed to the public through various publications. Abidin Mortaş writes, “We must trust architects. We must grant architects authority. Architects are the people who build and design our homes, providing us with the most humane way of living.” (Mortaş, 1936 pp. 24-27) Behçet Ünsal, on the other hand, states: “The modern architecture of our revolution will be covered in art history as residential architecture. The architect’s work is not a luxury or an ornament. Ask those who live in such authentic homes about the impact of architecture on the spirit and health, on life, on culture and education,” (Ünsal, 1939 pp. 60-62) highlighting the significance of ‘modern architecture’ in the development of the Turkish people by emphasising the quality of the lives, culture and education of the users of the ‘architectural works’ it has produced. The architect was deemed a key figure in the development of overall Turkish culture as well. Ünsal marked, “The young Turkish architect will accomplish two tasks. On the one hand, he will create beautiful works, and on the other hand, he will explain and teach what a beautiful work means,” (Ünsal, 1935 pp. 116-120) indicating that the architect's duty is not limited to teaching the public about beauty, but also involves directing the aesthetic taste towards the ‘new’; that the architect is also responsible for the public affinity with the new forms produced by the reforms. Zeki Sayar also touches on this idea of instilling ‘beauty’ as a concept into the public: “Today, volume and surface have harmony and architecture. We will instil beauty in our children through the harmony of these elements.” (Selah, 1931 pp. 253-254)

While explaining the necessity of the architectural profession to the public and instilling aesthetic values, one of the significant problems faced by Turkish architects of the period was ‘foreign architects’; the design of important government buildings being awarded to foreign architects was undermining the trust in Turkish architects or in fact the attempts to establish that trust. In an article titled ‘The fortune we give to foreign architects’, Sayar writes: ‘...Today, even the most advanced nations consider benefiting from international fame... Surely, in this great construction activity, the role of Turkish architects should be greater than that of foreigners...’ (Sayar, 1938 p. 89) while in another acticle he marks “…having worked in our country for years, having built cubic structures…[9] (Ünsal, 1939 pp. 60-62) as if it were not enough that another foreign celebrity had squandered millions on technical education, we are now witnessing all sorts

8 Examples of government residences include those in Kayseri, Isparta, Manisa ve Sarayköy...

9 Previously, Behçet Ünsal had used the term ‘Modern Architecture’ in his article published in Arkitekt, which was based on his lecture on ‘Modern Architecture’ at Ankara Radio, to describe the architectural style of the period. In the same article, he uses the phrase ‘our cubic structures’ and describes these structures as follows: "Our cubic structures, which we all frown upon, are a caricature. They are the result of a simple commercial concern. These structures mostly have no plans. Or if they do, they are very flawed, very poor. They do not see the sun. The installations are faulty. Greenery and flowers can only be seen in pots lined up in front of the windows. An unhealthy structure... The doctor is always consulted. Such a structure is a strange creation, the result of a construction foreman and a moneybags, but a tasteless and vulgar property owner, putting their heads together."

of political manoeuvring to convert a Turkish architect's beautiful work in Ankara into another structure." (Zeki, 1946b pp. 201-202) He stresses the importance of valuing Turkish architects and, in the continuation of his article, states that the absence of any criteria in the selection of 'foreign architects' had led to problems both in architectural education and in the field of practice, and that the consequences of this were observed in cities, 'especially Ankara', as it is clear in the words "These foreigners have found and continue to find opportunities to recklessly apply their architectural experiments in our capital city." [10] (Zeki, 1946b pp. 201-202)

In the 1930s and 1940s, the Halkevleri buildings were designed by 'authorised senior architects' through competitions or commissions, and their construction was carried out under the supervision and control of the Republican People's Party's technical office. (Anonymous, 1946 pp. 5-8) The fact that Halkevleri were all designed by Turkish architects was a source of pride for Turkish architecture. Moreover, through these structures, which were built throughout the country to spread the regime's ideology, Turkish architects found an opportunity to engage with the public and convey the necessity of modern architecture to the people.[11]

At this point, Arkitekt Journal, the only architecture publication of the period, holds a particularly important position. In addition, Ülkü Magazine, one of the publications of the Halkevleri, sought to convey the ideology's reflections in architecture to the public and to develop the relationship between the 'new society' and architecture by publishing drawings, sketches and projects of Halkevleri buildings that were completed or planned in the 'News from Halkevleri' section.

With the concept of the 'nation-state,' 'Republic Squares' representing the 'new regime' were built throughout the country. Halkevleri were placed around these squares, comprising the 'new' city centres.[12] During the single-party period, beyond their primary function, Halkevleri were also used for party affairs when necessary. Halkevleri had spaces designed for artistic and cultural activities such as libraries, meeting rooms, theatres, cinemas, conference halls, classrooms and workshops, as well as offices for Party workers.[13] The general approach to planning these buildings is based on a functional mass concept. The building is divided into two parts according to its functions: one mass containing offices, a library, classrooms, etc., and a second mass containing a large hall used for purposes such as cinema, theatre, and conferences, where the spatial requirements are also distinctly different. The building mass is separated according to its functions in a modernist approach. (Yeşilkaya, 2003) These two masses come together in different shapes, such as 'L, T or I', to form the main mass. These buildings also have a 'Modernist' attitude in terms of their formal characteristics. Zeki Sayar's words on Düzce Halkevi, 'Attentive eyes will have no difficulty understanding the interior of the building by looking at its exterior,' (Sayar, 1940 p.75) stress this relationship between interior and exterior, form and function.

The styles of Halkevleri also varied over the years. This was particularly influenced by the 'national' discourse that gradually began to emerge in the 1940s. For instance, a critical piece in Arkitekt argues: 'It has no national claim whatsoever. Buildings of this type must have an architecture appropriate to the national function they serve. We seek motifs expressing national spirit and enthusiasm in the general lines and details of Halkevleri buildings, which are an example of the progress bestowed upon the country by the republican regime in every field.' (Anonymous, 1940 pp. 198-202)

10 Sayar continues in the same article: "In countries that have surpassed the stages we are at today and have given direction to their art and architecture, the issue of foreign architects has been well resolved. Many countries have imposed certain restrictions on accepting and employing foreign architects, not for architectural education, but for the field of practice. The primary consideration in accepting these principles is the idea of protecting the art of the country's architecture. In this way, it is intended that foreign architects should not use the country as a testing ground."

11 The projects referred to here are those resulting from competitions or those designed by local architects. They do not include projects by the People's Party Consultancy Office.
However, during the establishment phase of the Halkevleri, the fact that some operated in buildings taken over from the Türk Ocakları prevented the formation of an impact that would strengthen the government by reflecting the ideology of the period in architecture.

12 Among the examples we examined, the Bursa Halkevi was built opposite the Republic Square, adjacent to the People's Party building.

13 The upper floor of the Karamürsel Community Centre building, designed by Leman Tomsu, houses offices belonging to the Republican People's Party.

This divergence in architectural style is actually an indication of a departure from the ideology that was intended to be instilled. Indeed, by the end of the 1940s, this would become quite apparent; the beginning of the multi-party era and the Democratic Party period being key factors. Halkevleri buildings were, after all, manifestations of the ideology of the single-party era in architecture and through architecture. However, this is neither the first nor the last such instance. As the expressive power of architecture has been utilised in every era, it was also utilised during the founding phase of the Republic and in the 1930s and 1940s, when the regime was being promoted to the public. It was supported not only at the building scale but also through architectural discourse, particularly in the 1930s. The fact that the architects who designed Halkevleri, defended the new regime's ideology in articles they wrote in Arkitekt Journal; that they chose topics that explained architecture and the 'new society' to the public; demonstrates that there was a strong link between these two institutions, which was also supported by the ideology of the period.

4. EXAMPLES OF HALKEVLERI PROJECTS COVERED IN ARKITEKT JOURNAL

4.1. Zonguldak Halkevi Project, Architect Zeki Sayar ve Abidin Mortaş, 1933

The building is positioned with its left corner aligned with the corner of the plot and its right corner set back 11 metres from the street. It was designed to serve four main functions: community centre, cinema hall, music hall, and private residence (Figure 1).

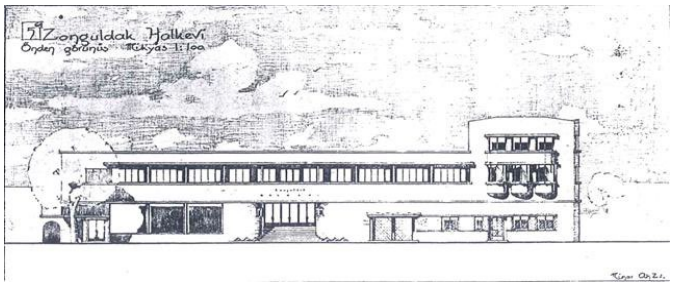


Figure 1. Zonguldak Halkevi Project Façade (Mortaş and Selah, 1933 pp. 85-88)

The conference hall has a capacity of 402 people. Of this, 32 seats are in the balconies. There are doors opening onto the foyer and garden. On the ground floor, there is a stage, artists' rooms, bathrooms and toilets. In the office section, the basement houses the boiler and coal storage, while the ground floor features the entrance, porter's rooms, and service areas. The upper floor comprises 20 rooms, administrative offices, and meeting rooms. A fully enclosed terrace runs the entire length of the sea-facing façade, providing a sheltered space to enjoy the sea view. (Mortaş and Selah, 1933 pp. 85-88)

During the registration process of the building, Tezcan Karakuş Candan, President of the Ankara Branch of the Chamber of Architects of the Turkish Chamber of Engineers and Architects (TMMOB), stated, "Halkevi buildings, which are symbolic structures of the period such as government residences in the urban planning of the Republic, are places of enlightenment for the Republic. Established on 19 February 1932, the Zonguldak Halkevi, the first Halkevi building obtained through a competition, is a cultural space for Zonguldak's social memory and the ideology of the Republic. It holds an important place in our architectural history not only for its function but also for the relationship it establishes with the urban fabric on an urban planning scale," (Anonymous, 2017) has emphasising the importance of the structure's reflection of social memory and the ideology of the Republic in the cultural space.

4.2. Eminönü Halkevi and Gymnastics Hall Project, Architect A. Sabri (Municipal Planning Department), 1936

This project was conceived for the plot of land above the Eminönü Halkevi building (Figure 2-4). The entrance to the auditorium and administration section is on Ankara Street, while the entrance to the theatre and gymnasium is in the garden of the existing Halkevi building. The hall and gallery have a capacity of 500

people. “In the external lines and mass composition of this hall, an effort has been made to ensure a beautiful effect, considering the work and purpose it will serve.” (Sabri, 1936. pp. 103-105)

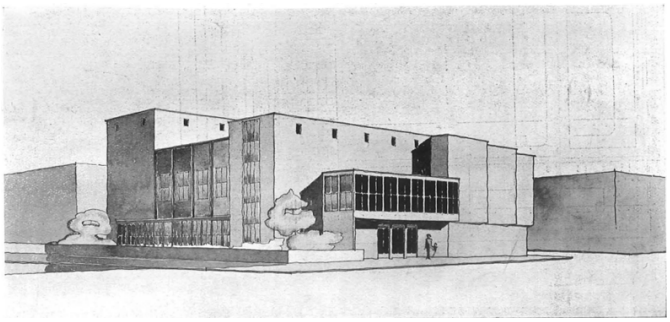


Figure 2. Eminönü Halkevi Gymnastics Hall Project, Frontal View (Sabri, 1936. pp. 103-105)

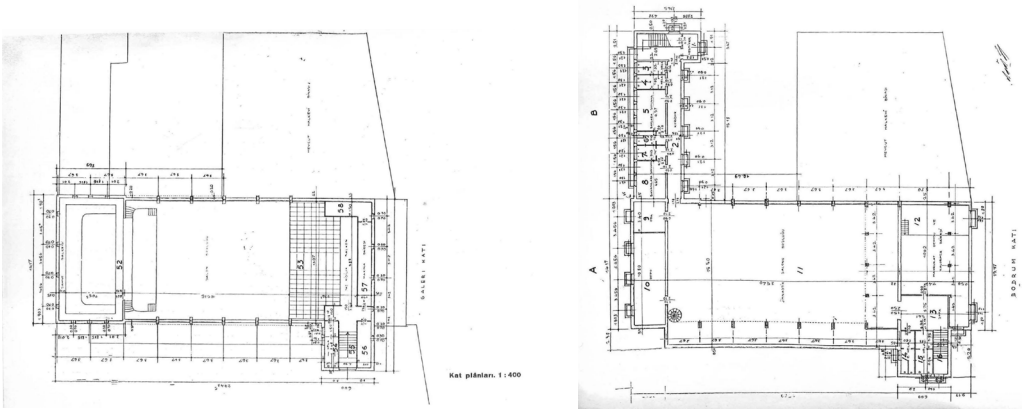


Figure 3-4. Eminönü Halkevi Gymnastics Hall Project, Floor Plans (Sabri, 1936. pp. 103-105)

4.3. Gerede Halkevi Project, Architect Leman Tomsu ve Architect Münevver Belen, 1936

The project is designed on a sloping plot of land, without a basement and with three floors. The ground floor comprises an entrance, hall, storage rooms, toilets, shelter, artists' rooms and an entrance hall. The most important feature of this floor is the community centre's library, placed there with easy public access in mind. Access to the garden from the side street has been considered; due to the slope, the garden has been designed as a spacious corner overlooking the library in the form of terraces (Figure 5-8).

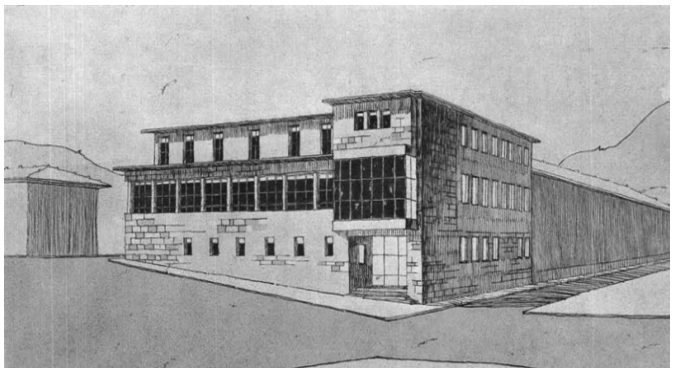


Figure 5. Gerede Halkevi Project (Tomsu and Belen, 1936. pp. 330-332)

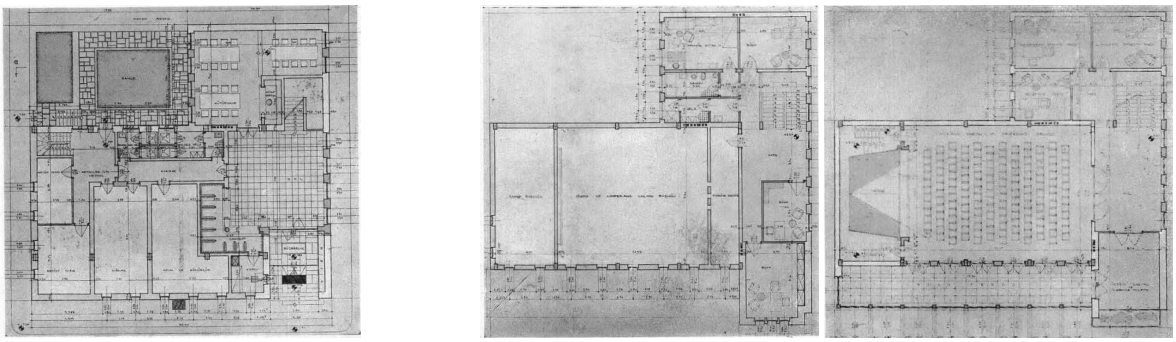
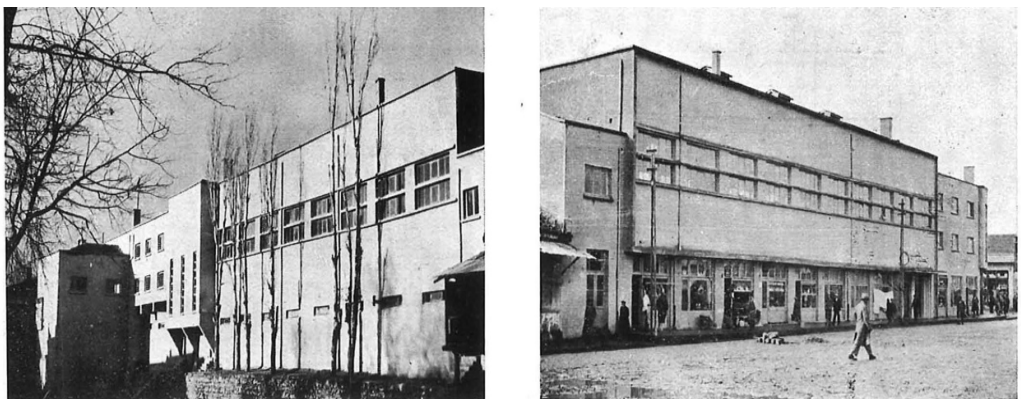


Figure 6-8. Gerede Halkevi Project Floor Plans: Ground Floor Plan, Upper Floor Plans (Tomsu and Belen, 1936. pp. 330-332)

The first floor consists of a cinema-conference hall (with a capacity of 150 people), spacious rooms overlooking the square, and toilets. These rooms are designed to be combined with the hall to serve as a foyer when required. The foyer can also be used as a covered or open terrace. There are also offices on the plan for this floor. Due to the double height of the hall, the second floor consists of offices and a room with a bed and toilet for important guests. The ground and first floors of the building are planned to be of stone, and the second-floor brick. (Tomsu and Belen, 1936. pp. 330-332)

4.4. Eskişehir Halkevi Building, İzzet Baysan, 1936

This building, owned by the Special Provincial Administration, overlooks a large square in Eskişehir (Figure 9-10) with seating arranged in a slight incline towards the stage, which can accommodate 250 people and is suitable for performances (Figure 11-12). This hall was designed with a rear entrance and dressing rooms so that it could be rented out to theatre companies. (Baysal, 1936. pp. 36)



Figures 9-10. Eskişehir Halkevi Building Front and Rear Views (Baysal, 1936. pp. 36)

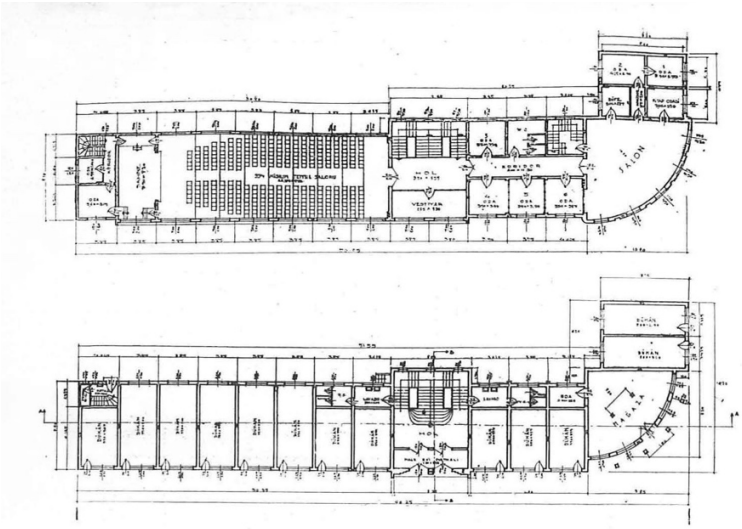


Figure 11-12. Eskişehir Halkevi Floor Plans (Baysal, 1936. pp. 36)

The Halkevi Building in the Çukurçarşı district was sold off in sections in 1951 and subsequently lost its original identity due to new construction and renovations. Eskişehir Metropolitan Municipality has announced that it will gradually implement a 'recreation' project to restore the listed Halkevi building, which had lost its architectural identity. (Eskişehir Büyükşehir Belediyesi, 2022)

4.5. Şehremini Halkevi Project, M. Architect Leman Tomsu, 1938

The building is set on the plot located at the corner where Tatlı Pınar and Baruthane Streets intersect and is positioned parallel to both streets. Due to the corner shape of the plot, in order to 'connect the two blocks in an orderly manner,' the block running parallel to Baruthane Street is curved so that it intersects the block on Tatlı Pınar Street at a ninety-degree angle, and then continues parallel to the street (Figure 13-14).

At the entrance, there is a small square created by the recessed ground floor. One of these two blocks consists of offices belonging to Halkevi, while the other consists of the large meeting hall. The offices are arranged side by side facing the garden in the middle of the sloping plot, while the corridor is arranged on the street side. Taking advantage of the slope, the library and classrooms are located on the ground floor and have a visual connection with the garden.

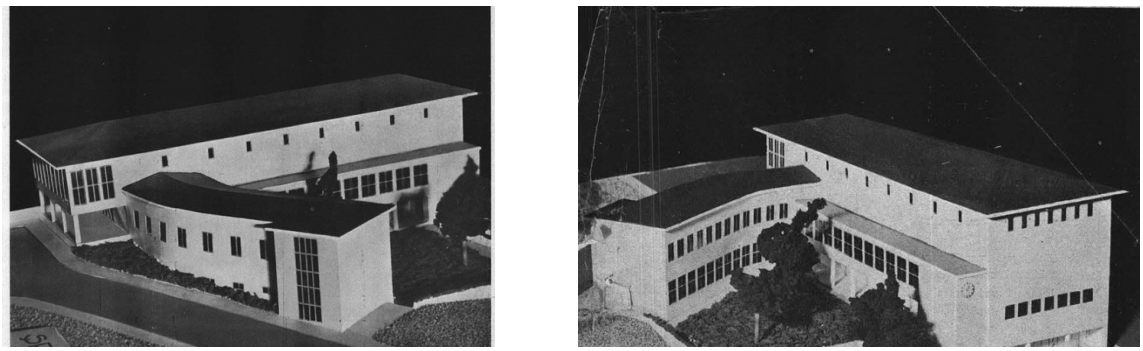


Figure 13-14. Şehremini Halkevi Project Model (Tomsu, 1938, pp. 253-256)

The ground floor of the building housing the large meeting hall was designed as a gymnasium, again taking advantage of the slope. The meeting hall is designed to accommodate 500 people, with a gallery to seat 200 people. The hall has a glass foyer on the garden side, which overlooks the view. Rooms for artists have been

designed in the lower part of the stage. This section, which can also be accessed from the main entrance, can be reached via the stairs located behind the foyer (Figure 15).

“In the layout of the building, the aim was to work with simple shapes, especially to suit the plot and requirements.” (Tomsu, 1938, pp. 253-256)

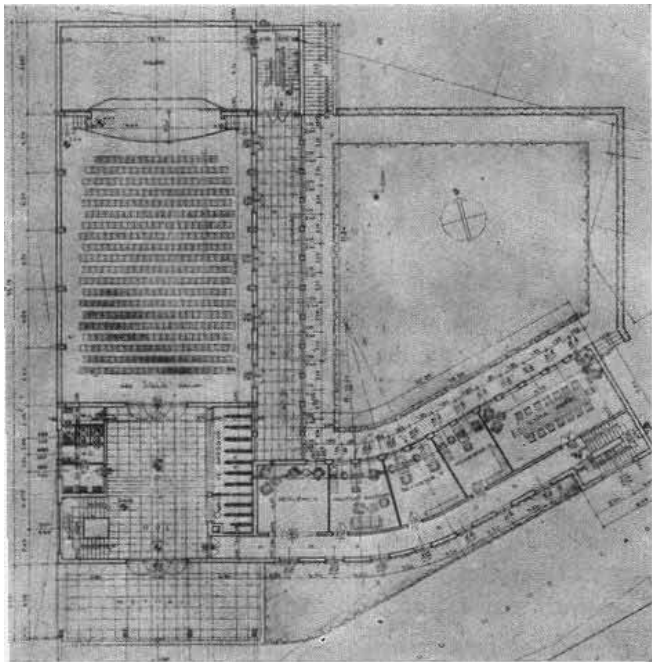


Figure 15. Şehremini Halkevi Project Floor Plan (Tomsu, 1938, pp. 253-256)

4.6. Bursa Halkevi Project Competition, 1938

A design competition was launched for a community centre building to be constructed on the plot of land adjacent to the Republican People's Party building on Bursa Republic Square. The competition stipulated that the new building must be appropriately integrated with the existing party headquarters and that the party headquarters must be connected to the Halkevi after its construction. The projects sought to modify the façade of the party headquarters to match that of the community centre. The projects by architects Münevver Belen (Figure 16) and Abidin Mortaş (Figure 17-19) were selected as the winners of the competition. (Anonymous, 1938, pp. 16-20)

The main façade of the building was aligned with the existing People's Party building, and the two buildings were connected by a wide terrace at the front, creating the effect of a single building. To achieve this, modifications have been made to the façade of the existing building.

“The administrative and committee sections are located at the front and side façades, while the cinema section is at the rear façade. The front section consists of a basement and three floors. The upper floor is reserved for Atatürk's visits and rest periods. The large terrace in front of the reception hall was designed to allow our Great Leader to greet the people of Bursa and was given prominence with a distinctive shape at the dominant corner of the building. The middle floor houses the meeting hall for the President and committees, offices, committee rooms, and their ancillary facilities.” (Anonymous, 1938, pp. 16-20)

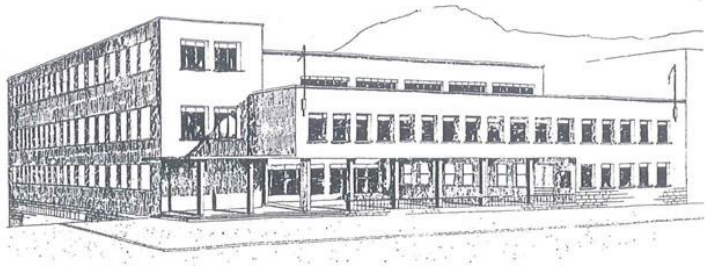


Figure 16. Bursa Halkevi Project – Architect Münevver Belen (Anonymous, 1938, pp. 16-20)

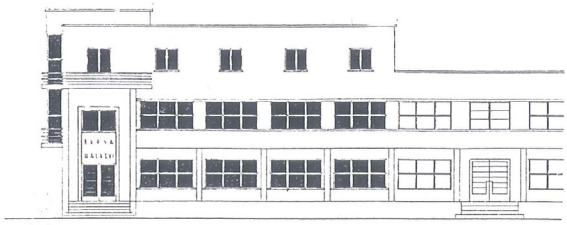


Figure 17. Bursa Halkevi Project – Architect Abidin Mortaş Front Façade View (Anonymous, 1938, pp. 16-20)

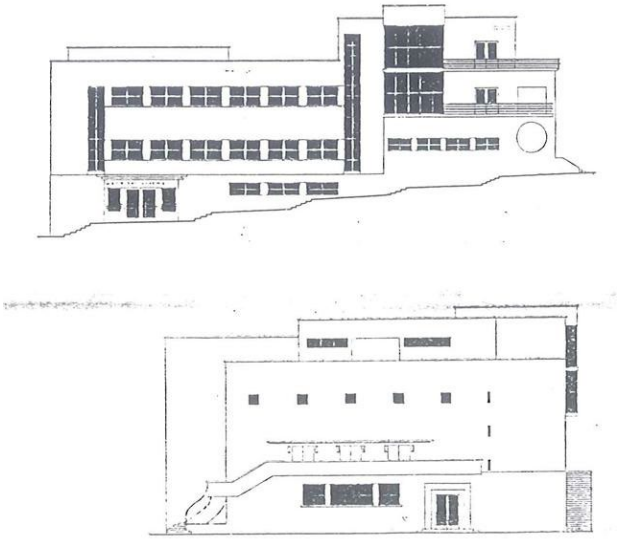


Figure 18-19. Bursa Halkevi Project-Abidin Mortaş-Side and Rear Façade View (Anonymous, 1938, pp. 16-20)

"On the ground floor, there is the main entrance and a library, lecture halls, an auditorium, and their associated toilets, cafeteria, and other facilities, which the public can always access easily and comfortably. A shelter was constructed in the basement... Due to the slope of the land, the basement extends to the side and rear streets, therefore the cinema foyer has been placed on this floor separately. From this foyer, one enters the ticket hall and ascends to the stalls via a wide staircase. The hall here serves as a foyer. Beneath the cinema hall, a gymnasium, showers, equipment rooms, a boiler room, a coal cellar, and various storage rooms have been installed. As the gymnasium was built at the level of the central courtyard, the possibility of conducting outdoor training sessions here has also been considered. The building will be constructed with a reinforced concrete skeleton and brick walls. The roof will be wide, with hidden gutters and covered with tiles. The exterior plaster will be coloured fine plaster, and the plinth will be finished with decorative plaster. The floor coverings will generally be patterned cement tile coating, except for the rooms on the Atatürk floor, which will be covered with parquet. The veranda floor will be covered with marble. The total area of the floors, including the basement, terraces, veranda and cinema hall space, is 3,350 square metres.

No luxury materials will be used in this building; only solid, local materials and careful workmanship will be employed." (Anonymous, 1938, pp. 16-20)

As seen in this final quote, community centres were constructed in association with the Party, and while the use of local materials was encouraged, luxury was avoided.

5. CONCLUSION

Defined as 'institutions established to educate the public and direct them towards national unity and ideals, and the structures in which these institutions operate,' Halkevleri are not only a symbol of an ideology that began in the 1930s, (Karakaş, 2011) but also exemplify the architectural practice of the Early Republican Era.

Established to instil the idea of modernisation in society and to foster a modern social life and cultural perspective that would carry early Republican Turkey into the future, Halkevleri are structures that embody an important period in Turkish architectural history. With an architectural language that reflects the spirit of the era, they are concrete examples of the Turkish discourse of modernity. The fact that the Arkitekt Journal, the most important publication introducing architecture to early Republican Turkey, also featured the community centre projects highlights once again the significance of these projects in terms of their functions, architectural practice and architectural history.

This study, titled "Two Institutions in Conveying the Republican Ideology and Architecture to the Public: Halkevleri and Arkitekt Journal," has revealed that architecture in the early Republican period functioned not merely as a technical field of production but also as a tool for ideological transmission and social transformation. Halkevleri and Arkitekt Journal constituted two different yet complementary institutional pillars of this process.

Halkevleri served as physical centers that directly conveyed Republican ideology to broad segments of society through their spatial organization and cultural functions. Reading rooms, lecture halls, workshop spaces, and event venues aimed at constructing the modern individual and modern society in practice. With their simple geometric forms, functional layouts, and unadorned modernist language, these buildings translated the architectural discourse of the new state into everyday life.

Arkitekt Journal, on the other hand, articulated the same ideological framework on a discursive and theoretical level rather than through spatial practice. The journal played a key role in introducing the principles of modern architecture, discussing how a national architectural language should be shaped, and legitimizing the cultural aims of the Republic through architectural discourse. Thus, the ideological–spatial program materialized in the Halkevleri was conceptually consolidated and theoretically framed through Arkitekt.

This study demonstrates that Halkevleri architecture and Arkitekt Journal shared not only a common modernizing orientation but also a holistic ideological perspective that regarded architecture as a tool for social transformation. While Halkevleri materialized this ideology through physical space, Arkitekt constructed its conceptual and aesthetic foundations, guiding both the professional milieu and the public. In conclusion, these two institutions played complementary strategic roles in transmitting the cultural and architectural vision of the Republic to the public: one by putting it into practice, the other by providing intellectual guidance. Together, they became central actors in the spatial and ideological construction processes of modern Turkey.

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LOSS OF MODERN ARCHITECTURAL HERITAGE: A STUDY ON THE BAKIRKÖY ISBANK HOUSING ESTATE

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ABSTRACT

The Isbank Housing Estate is one of the significant examples of modern Republican era architecture situated within the historical and cultural fabric of Bakırköy. Despite lacking any formal urban conservation status, the residential complex warranted preservation due to its architectural, typological, and landscape qualities. However, the urban transformation process entailed the complete demolition of the existing blocks without consideration of any preservation criteria, leading to the irreversible loss of both the buildings' original typology and the historical green-space system that had existed in the area. The failure to preserve fundamental components of modern architecture such as building layout, massing, façade character, material integrity, and open-space use has made the architectural incompatibility of the newly constructed Cadde Bakırköy project even more conspicuous. This process, which resulted not only in physical destruction but also in the erasure of urban memory, signifies the disappearance of a heritage site that represented the distinctive housing production practices and social living models of the early Republican period. The Isbank Housing Estate was an important example of 20th-century modern residential fabric and possessed qualities of international significance, with approximately 70% of its layout consisting of open green areas. Yet, through the transformation, the extensive green structure was fragmented, the tree population removed, and the settlement replaced by a denser residential pattern confined to smaller parcels. This study aims to examine the disappearance of the Bakırköy Isbank Housing Estate an important landmark in the history of modern architecture the impacts of the urban transformation process on heritage sites, and the architectural incompatibilities of the Cadde Bakırköy project. It also discusses institutional, legal, and spatial reasons behind the failure to preserve modern residential heritage and proposes strategic recommendations for safeguarding architectural heritage in future urban transformation initiatives.

Keywords: Modern Architectural Heritage, Urban Transformation, Bakırköy Isbank Housing Estate, Cadde Bakırköy, Urban Memory, Republican Era Housing

1. INTRODUCTION

1. 1. Purpose and Scope of the Study

The rapid urbanization process that accelerated in Turkey after World War II led to increasing issues such as population pressure, a housing crisis, and spatial irregularities, particularly in major cities. Bakırköy, located on the western side of Istanbul, entered a phase of rapid growth after the 1950s due to improvements in transportation infrastructure and the concentration of industrial activities in surrounding areas. The substantial migration directed toward the district during this period both encouraged the development of planned residential areas and created conditions for the emergence of uncontrolled squatter settlements. The unplanned construction that particularly developed in the areas north of the railway line constituted a critical turning point in the spatial development of Bakırköy (Keleş, 2025).

When Turkey's general housing policies of the 1950s and 1960s are examined, it becomes evident that state intervention remained limited, while the private sector increasingly assumed a more prominent role in housing production. During this period, a new housing production model emerged in which banks became key actors that both encouraged savings and supported modern housing development. Lottery- or premium-based housing projects initiated by banks transformed homeownership practices and became an important means through which the modern architectural approach of the period was reflected in everyday life (Şumnu, 2014).

The adoption of the modernist approach in the Republic's housing production also brought a reinterpretation of the relationship between architecture and everyday life. Within this framework, the early mass-housing practices developed in Ankara and Istanbul embraced an approach that centered modern lifestyles, rational planning, and the arrangement of open green spaces. Isbank's lottery-based housing projects are regarded among the examples in which these modernist housing ideals found large-scale expression in the housing market and are considered a model that contributed to the formation of a middle-class housing culture in Turkey (Bozdoğan, 2002).

One of the most notable and early examples of housing production carried out under the initiative of a bank in Turkey is the Isbank Lottery Housing Project, designed in 1949 in Ankara by architect Abidin Mortaş. This project not only made visible the role of the banking sector in housing production but also established a pioneering model illustrating how the Republic's modernization ideals were reflected in residential architecture. The distribution of these dwellings exclusively to Isbank customers through a lottery/premium system rendered the project an innovative practice both economically and socially, contributing to the development of a new financial model that linked homeownership to a culture of saving. Mortaş's second housing projects, realized again in Ankara in 1952, demonstrated the continuity of this production practice, the institutional emergence of banks as actors in modern housing development, and the increasing prevalence of lottery-based housing provision throughout the 1950s. For this reason, Mortaş's projects hold a critical position in the history of Turkish modernization not only from an architectural perspective but also in terms of housing policies and the formation of a social housing culture (Şumnu, 2014).

Following the initial examples of Isbank's lottery-based housing in Ankara, the transfer of this model to Istanbul expanded the scale of bank led modern housing production and enabled the development of more comprehensive residential designs. The first major implementation of this process was the "Isbank Lottery Housing Neighborhood," designed in 1964 by architect Kadri Erkman in Feneryolu, Kadıköy. Planned at the neighborhood scale, the project embodied the contemporary approach to modern mass housing, featuring building blocks, open green areas, a pedestrian circulation scheme, and an integrated system of social facilities qualities that reflected the planning principles of the period. The Feneryolu development is considered one of the early examples in Turkey where modern lifestyles were supported through spatial organization. This project was followed by the "Isbank Lottery Apartments," designed in 1968 by architect Lemi Varnalı. This apartment complex became one of the early examples in Istanbul where the transition from individual houses to multi-story apartment living became visibly established. The treatment of the

apartment typology both in terms of mass placement and the design logic of the spaces between buildings demonstrated a clear alignment with modern architectural principles, making the project a tangible indicator of the architectural transformation of the era. The lottery/premium housing developments carried out by Isbank in different periods and through various architects not only institutionalized the role of the banking sector in housing production but also marked important turning points in the evolution of modern residential architecture in Turkey. While these buildings reflected the design approaches of their time, they also transformed homeownership into a social experience mediated through a lottery system and into a practice through which modern living ideals were embedded in everyday life (Şumnu, 2014).

Parallel to Isbank's lottery-based housing initiatives, the bank also developed direct housing production policies for its own employees. However, as Isbank operated under a private legal status, its authority to directly allocate property to its staff was limited; therefore, the housing provision process was carried out through the Real Estate and Credit Bank (Emlak ve Kredi Bank) in accordance with the legal framework. This practice is significant in demonstrating how the housing finance mechanisms of the period intersected with state supported banking models. Furthermore, considering the corporate housing policies of the 1950s and 1960s when private sector institutions began to provide social facilities for their employees. This approach should be regarded as one of the early examples of worker and civil servant housing developed in Istanbul.

In this context, the Isbank Housing Estate, which forms the focal point of this study, was designed to respond to the urban development dynamics of the period. Its planning process was shaped as a social housing model specifically intended to meet the accommodation needs of the bank's own employees. With its extensive open green areas, contemporary site layout, and rational planning principles, the estate presents a striking example of how modern housing production was implemented through an institutional actor.

The primary aim of this study is to examine the urbanization process that accelerated in Turkey after World War II and the parallel development of modern mass-housing production practices through the case of the Isbank Housing Estate located in the Bakırköy district of Istanbul. The study seeks to evaluate the development of modern residential architecture in Turkey, the reflections of lottery-based housing projects carried out by banks on the urban fabric, and the architectural heritage value of these structures. Within the scope of the research, Turkey's post-1950 housing policies, the roles of the state and the private sector, the influence of banks on housing production, and the social and spatial dimensions of the modernist housing approach are addressed. The settlement planning, design characteristics, and social functions of the Isbank Housing Estate are analyzed within the framework of modernist architectural principles; moreover, the impact of the urban transformation process on the architectural heritage value of the estate is examined through the Cadde Bakırköy Project.

The study is significant for understanding both the preservation of architectural heritage and the effects of urban transformation practices on society and urban space.

1. 2. Site Planning and Design of the Isbank Housing Estate

The Isbank Housing Estate is located in the Bakırköy district, situated between İncirli Street and Yüce Tarla Street, on blocks 888 and 889. Developed in the shadow of the rapid urbanization process that accelerated in Turkey after World War II, and of the accompanying issues such as population pressure, housing shortages, and spatial irregularities in major cities, the project constitutes a significant example of the institutional housing approach of the period in terms of its planning and construction processes. The project was prepared by Architect Ayhan Böke and Architect-Engineer Lemi Varnalı and submitted to the municipality on June 11, 1964. After an extensive evaluation period, it was approved on June 15, 1965. Both project supervisors were employed within the Isbank Directorate of Construction and Real Estate at the time, playing active roles in the design, planning, and implementation phases of the bank's institutional

housing projects. In this respect, the project is important not only for its contribution to housing production but also for the shaping of the bank's institutional architectural heritage.

Technically, the project stands out for its meticulously planned infrastructure systems. The design of the sewage and stormwater drainage systems was carried out by the experienced infrastructure engineer Salih Zeki Taylan, ensuring that the estate had a functional and sustainable infrastructure. During the initial phases of construction, Engineer Süleyman Demirel served as the contractor; however, due to political responsibilities, he was unable to complete the project, and the construction process was transferred to another firm. Despite these changes, the construction of the estate is considered to have been completed in October 1966, and it is observed that the structural, spatial, and technical standards envisioned by the project were largely achieved (Salman, 2023).

The Isbank Housing Estate was conceived as a modern residential fabric in which housing blocks with similar plan schemes are connected by expansive gardens and open spaces. Within the estate, a total of nine blocks three five story and six three story buildings are located along İncirli Street, while six blocks three five-story and three three story buildings are situated along Yüce Tarla Street. Constructed during a period when the housing demand in Istanbul was particularly pronounced, this building complex can be regarded as one of the significant examples of the modern housing production approach of the era. The Çamlık Atatürk Park and the Muhtarlık Park, located in the southern part of the estate, integrate with the internal green areas of the site, creating a strong continuity of open spaces within the surrounding environment. The open and semi-open spaces, which constitute approximately 70% of the total area, are defined by the housing blocks placed orthogonally to one another.

This spatial configuration is aligned with the notion of collective living that stands out in modernist housing settlements; it aims for common use areas that support social interaction to form the main backbone of the residential layout (Mumford, 2000).

The extensive open green areas that occupy a significant portion of the Isbank Housing Estate's site plan contribute notably to creating a balanced microclimate at the regional scale when evaluated together with the building groups. These areas both support air circulation between the residential blocks and enhance the climatic comfort of the settlement by reducing the heat-island effect through their vegetative landscape structure. The three-story blocks positioned along the east–west axis serve as a buffer that intercepts the prevailing poyraz winds, thereby creating a calmer and more sheltered microclimate within the open spaces of the estate.

The use of the same plan layout in the three- and five-story blocks ensures not only a formal resemblance among the buildings but also the formation of a repetitive and coherent spatial organization in the interiors. This arrangement aligns with the standardized production approach of modernist architecture, emphasizing economy in material use and functional order in spatial organization. Combined with the modest modernist lines preferred on the façades, the wide window openings, and the continuous balcony designs, this configuration enables the buildings to develop an unpretentious yet refined architectural language (Frampton, 1992).

When all of these features are considered together with the spatial diversity introduced by the roof terraces, the Isbank Housing Estate becomes one of the most characteristic and representative residential settlements of its period. With its site planning, architectural style, and climate-responsive design decisions brought together in harmony, the Isbank Housing Estate can be regarded as a distinguished example of modernist residential production.

2. AN EVALUATION OF THE ISBANK HOUSING ESTATE WITHIN THE CONTEXT OF REPUBLICAN ERA RESIDENTIAL HERITAGE

A large portion of the residential buildings constructed in Bakırköy during the Republican period has been transformed through feasibility based approaches driven by the development policies of the time, which

placed urban memory and architectural values in a secondary position. In this process, many early-period residential structures were demolished and replaced with new, mixed use buildings that incorporated commercial functions. The IşBank Housing Estate, characterized by an original settlement layout reflecting the modernist approach to residential production, survived until recent years. However, its demolition in 2023 within the scope of an urban transformation scheme has rendered its architectural and urban heritage value accessible today only through archival documents, plans, photographs, and user accounts. This situation constitutes a significant example of the loss of Republican era residential works without preservation.

An examination of 20th century buildings shows that most large scale educational, healthcare, and administrative facilities from the period have been both preserved and continued in use with their original functions. These structures constitute significant cultural heritage, as they reflect the public service approach and architectural outlook of their time.

On the other hand, the situation is generally different for 20th century residential buildings. Developed to meet housing needs shaped by the social dynamics of the period, rapid urbanization, and changing family structures, these residences offered original spatial solutions within the context of new settlement areas and neighborhood organization. Therefore, 20th century housing should be regarded not only as physical building examples but also as historical documents containing valuable information about the social, cultural, and urban life of the era. Due to these qualities, residential buildings of the period possess high historical and cultural value, making their preservation and documentation critically important (Özkaban, 2014).

Modern period residential buildings stand out for their diversity of architectural styles, holistic design approach, and innovative explorations in spatial organization. These structures also contribute significantly to the architectural, artistic, and technological understanding of their time through experimental approaches to building systems and material use, fostering the emergence of new design ideas and modes of practice. Modern residences can therefore be regarded not merely as living spaces, but as examples of aesthetic and technical experimentation that push the boundaries of contemporary architectural practice.

DOCOMOMO identifies six key criteria in the evaluation of modern heritage: cultural and aesthetic value, social value, historical value, technical value, group value, and integrity. The Işbank Housing Estate features a lower development density compared to its surroundings, with semi-public open spaces (green areas) accounting for up to 70% of the settlement. This lower density and simple development approach are further reinforced through the block heights (3–5 stories) and the choice of forms. The site plan's minimalist design language is consistently reflected down to details such as façade composition, interior layouts, entrance doors, and railings, exemplifying a holistic design approach (Salman, 2023). Therefore, the Işbank Housing Estate can be regarded as a significant settlement both culturally and aesthetically.

The estate is an important example of social housing directly commissioned by the Bank for middle income employees. By not only meeting the housing needs of its staff but also providing a communal living environment where employees and their families could reside together, it diverges from the social norms of its period by improving living and working conditions. In addition, the open green areas within the estate, together with Atatürk Çamlık Park, the Neighborhood Headship Park, and the garden of the Bakırköy Psychiatric Hospital, play a significant role in shaping Bakırköy's green space system. For this reason, the estate holds a high social value.

The estate holds historical significance as one of the three housing complexes built by Isbank for its employees. Lemi Varnalı and Ayhan Böke, two prominent representatives of the modern architectural approach of the period, played active roles in the project's design process. During the construction phase, contributions were also made by Süleyman Demirel, an important figure in Turkish political history. With these characteristics, the estate constitutes a valuable example both architecturally and historically (Salman, 2023).

The estate possesses a high technical value, derived both from its structural system and from the holistic approach applied to the design of its interior and exterior spaces. The rational structural system prioritizes durability and functionality, while the façade design ensures aesthetic coherence. This approach is carried through into the interior spaces as well: kitchen countertops are planned in alignment with the window sills, interior doors are integrated with cloakroom units, and built-in wardrobes are conceived as integral components of the design (Salman, 2023). These details optimize spatial use while providing aesthetic harmony and functional integrity. Furthermore, the design of each element within the estate doors, cabinets, countertops in direct relation to the architectural plan strengthens the technical integrity and consistency of the design. In this respect, the estate holds technical value not only in terms of structural resilience but also with regard to interior planning and user experience, serving as a notable example in both respects.

Although it had survived until recent years, the estate demolished in 2023 within the scope of an urban transformation process possessed a high group value and a strong sense of integrity, stemming from the coherence it exhibited both at the site scale and at the scale of architectural elements. The order established among the buildings, the configuration of shared open spaces, circulation relationships, façade character, and recurring architectural components all demonstrate that the estate was designed as a unified whole and reflected a collective architectural approach. This consistency extended not only to the architectural features of the buildings but also to the landscape layout, shared-use areas, and site furnishings, forming a comprehensive sense of unity. Therefore, although its physical presence has been lost due to urban transformation, the estate is still regarded as a significant example of group value in terms of its planning approach and design coherence.

When the criteria defined by DOCOMOMO for the evaluation of modern heritage cultural and aesthetic value, social value, historical value, technical value, group value, and integrity are considered together, the Işbank Housing Estate emerges as a significant example of modern architecture, distinguished by its qualities that meet all six criteria.

When modern architectural heritage in residential buildings is evaluated, it becomes evident that many housing estates from the modern period in Turkey have disappeared due to intense urbanization pressures. Consequently, examples possessing group and fabric value are now scarcely encountered, apart from a limited number of mass housing and staff housing implementations (Omay Polat, 2008). In this context, the Isbank Housing Estate draws attention as one of the earliest examples to emerge in the post modernization period in terms of both building types and construction technology, and it occupies a distinctive place within the modern housing heritage.

Article 3 of Law No. 2863 on the Protection of Cultural and Natural Assets defines cultural assets as elements belonging to prehistoric and historical periods. https://uludagalan.ktb.gov.tr/TR-375922/2863-sayili-kultur-ve-tabiat-varliklarini-koruma-kanunu.html

This definition excludes architectural heritage from the modern period particularly buildings constructed in the second half of the 20th century creating a significant gap in preservation practices. As a result, tangible examples of modern architecture are rapidly disappearing, and the values belonging to the recent past are becoming increasingly invisible. In this context, post 1950 modern housing estates such as the Bakırköy Isbank Housing Estate should be regarded as 'cultural heritage' not only for their architectural characteristics but also for the ways in which they reflect the social, economic, and cultural dynamics of their time. This approach is crucial for the preservation of modern residential heritage and its transmission to future generations.

Modern architectural works are significant cultural documents that, through their identity, representational qualities, and period-specific characteristics, support the continuity of urban memory. Therefore, the preservation of modern period buildings is founded not only on aesthetic or technical considerations but also on the necessity of safeguarding the continuity of collective memory. In line with contemporary conservation approaches, modern architectural heritage should not be regarded as limited to the scale of

an individual building; rather, it should be evaluated within the holistic relationships it establishes with its surroundings, landscape elements, and the urban fabric.

In this context, the Isbank Housing Estate is a residential settlement that embodies the planning principles of the modern period through its extensive green areas, balanced mass configuration, and coherent plan organization. All these qualities require the building group to be regarded not merely as an individual architectural example but as an integrated urban heritage area.

The qualitative criteria required for buildings to be recognized as cultural assets worthy of preservation are defined under three headings in Article 3 of Law No. 2863. According to this article, a building must first be associated with science, culture, religion, or the fine arts (Madran, 2006). The Isbank Housing Estate, like other examples of 20th century modern architecture, meets this criterion as a residential settlement that reflects the scientific and artistic approaches of its period.

The second criterion addressed in Article 3 is the building's role as a part of social life in prehistoric or historical periods. This measure emphasizes the functionality of the structure and its place within societal life (Madran, 2006). Every building emerges from a functional need. The Isbank Housing Estate likewise fulfills this criterion, as it represents one of the most significant living examples of the feasibility and applicability of small scale modernist residential production in its period.

The third criterion put forward in Article 3 of Law No. 2863 is the requirement that the work possess scientific and cultural originality (Madran, 2006). The Isbank Housing Estate can be regarded not merely as a building design but as a comprehensive settlement plan and design. The open green areas within the estate, which occupy more than 70% of the total ground surface, are of great importance in terms of mass void balance. These areas provide spaces for social activities while also playing a critical role in meeting the physical, physiological, and psycho social needs of all users.

The years during which the Modern Movement was influential worldwide coincide with the early period of the Republic of Turkey. In this period, the modern architectural approach in Turkey was generally implemented using traditional construction methods due to the limited capacities of the building sector and economic constraints; buildings were constructed with small spans and typically with pitched, tiled roofs (Bulut, 2005). However, the Isbank Housing Estate stands out as one of the modern architectural examples of this era. The use of roof terraces within the building group became one of the characteristic elements of the structures, serving as an important feature both functionally and aesthetically.

The landscape design of the Isbank Housing Estate is equally distinctive and noteworthy. The gardens within the settlement are arranged in a rather simple manner and enriched with both coniferous and broad-leaved trees as well as various shrub species. Among these plant species are several endemic types, along with endangered species that require protection. This arrangement not only provides visual aesthetic value but is also designed to meet users' needs for rest, social interaction, and physical activity.

Moreover, the size of the open green areas determines the solid void balance within the settlement, strengthening the environmental character of the buildings and creating a spatial order that enhances overall quality of life. With these characteristics, the Isbank Housing Estate is regarded as an original and pioneering architectural ensemble both architecturally and in terms of landscape design among the early examples of modern architecture in Turkey.

2.1. Analysis of the Isbank Housing Estate and the Cadde Bakırköy Project According to DOCOMOMO Criteria in the Context of Modern Architectural Heritage

Although urban transformation practices are defined as planning processes aimed at spatial renewal, they often involve interventions that fail to consider historical, cultural, and architectural continuity. The case of the Isbank Housing Estate in Bakırköy constitutes one of the striking examples of this situation, resulting in the failure to preserve modern architectural heritage.

When the Bakırköy Isbank Housing Estate where the impacts of urban transformation on modern architectural heritage can be concretely observed and the Cadde Bakırköy Project, which is currently under construction in the same area, are examined according to the six fundamental criteria established by DOCOMOMO for modern heritage, it becomes clear that the two differ markedly.

Cultural and Aesthetic Value: The Isbank Housing Estate represents the simple and functional aesthetic approach of modern architecture through its low rise, human scaled residential typology and open public green spaces. The settlement presents a spatial organization that reflects the modern lifestyle culture of its period.

In contrast, the Cadde Bakırköy Project features a gated site configuration with a denser and more dominant aesthetic expression. Although the green areas in the Cadde Bakırköy Project, similar to those in the Isbank Housing Estate, are designed primarily for the residents, the way these areas are arranged does not align with the fundamental principles of modern residential heritage. While the open spaces in the Isbank Housing Estate offer a spatial character defined by wide distances between blocks, a dominant vegetative landscape, and permeable and simple arrangements, the green areas in the Cadde Bakırköy Project have turned into a decorative and controlled landscape design with a higher proportion of hard surfaces.

Moreover, unlike the functionalist approach of the modern period, the potential of open spaces for circulation, social interaction, and daily use remains limited; the aesthetic emphasis shifts from natural landscape toward designed environmental elements. Therefore, the dominance of ornamental private landscaping causes the project to diverge both culturally and aesthetically from the principles of modern residential heritage, which are based on simplicity, functionality, spatial continuity, and the use of natural landscape.

Social Value: The Isbank Housing Estate is an example of social housing directly built by the bank for middle income bank employees. Beyond meeting the housing needs of its staff, it created a communal living environment composed of employees and their families, thereby improving living and working conditions in a way that differed from the social structure of its period. The Isbank Housing Estate represents the social housing approach of its time and possesses high social value, offering positive social contributions both to its residents and to its surroundings. In contrast, the Cadde Bakırköy Project is primarily a market-oriented development and therefore holds limited social value.

Historical Value: The Isbank Housing Estate carries the spatial traces of a historical period as one of the early implementations of modern residential architecture in Turkey. The fact that similar examples of this urban fabric have largely disappeared today due to intense urbanization processes further increases the historical value of the estate. The Cadde Bakırköy Project, on the other hand, does not provide any sense of historical continuity and negatively affects historical value by eliminating an original residential fabric from the modern period.

Technical Value: The Isbank Housing Estate reflects the technical principles of modern architecture through its contemporary reinforced concrete structural system for its time, its low rise modern block typology, and its distinctive site planning and design. It is among the early examples in Turkey where modern construction technology began to be applied at the residential scale. The Cadde Bakırköy Project carries contemporary standards in terms of modern construction technologies (prefabrication, high-quality reinforced concrete, smart building systems, etc.); however, these features are not innovative but rather routine technological practices in today's market. While the technical value of the Isbank Housing Estate stems from the innovation it represented during the early stages of modernization, the Cadde Bakırköy Project is not technically original but instead relies on current standards.

Group Value and Urban Fabric Value: The Isbank Housing Estate forms a strong group character through its distinctive building density, block arrangement, and relationship with open spaces. This coherence represents one of the rare examples demonstrating how modern housing settlements are positioned within the urban fabric. Cadde Bakırköy, on the other hand, presents an inward-oriented gated-site structure that

does not establish harmony with the surrounding urban fabric and does not possess an authentic quality in terms of group value.

Integrity Value: The Isbank Housing Estate is a settlement that has largely preserved its integrity through its original mass layout, block intervals, landscape relationships, and street pattern. This condition is an important factor that strengthens the preservability of modern architectural heritage. Cadde Bakırköy, on the other hand, offers a coherent design only within its own boundaries and does not establish integrity in a historical or environmental context. The Isbank Housing Estate was designed in line with the modernist planning principles of its period and features a settlement texture where open green spaces are integrated with the building masses and establish strong relationships with their surroundings. Approximately 70% of the settlement consists of open green areas, which provide climatic as well as social comfort for users. In the placement of the blocks, the mass void balance was taken into account; the blocks were positioned so that they would not overshadow one another, and the East West orientation was used to optimize wind and light flow.

The gardens were arranged at equal distances to all users, creating an accessible spatial organization that supports neighborly interaction. Moreover, Çamlık Atatürk Park, Muhtarlık Park, and the internal green areas of the site were interconnected to form a continuous green network. This approach results in a permeable, human-scaled settlement that harmonizes with its environment.

The Cadde Bakırköy project, constructed as part of the urban transformation process, presents a more compact and enclosed settlement layout. The distances between the blocks have been reduced, and the proportion of open green areas has significantly decreased (Photo 1).

Photo 1. *Site Plan of the Cadde Bakırköy Project*

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The green landscape has been confined solely to the immediate surroundings of the buildings, and the permeability and neighborhood interaction present in the Isbank Housing Estate have disappeared in Cadde Bakırköy. The increased building density may hinder wind circulation and natural ventilation, while the higher proportion of hard surfaces is expected to intensify the heat island effect. Moreover, the endemic and protected plant species found in the gardens of the İşbank Housing Estate have not been preserved in the Cadde Bakırköy project. The simple and functional character of modern architecture, along with the period-specific identity of social housing, has been replaced in Cadde Bakırköy by a more commercialized spatial approach.

3. CONCLUSION AND EVALUATION

The Isbank Housing Estate stands out as a residential area that comprehensively represents the housing approach of the modern era. Designed with low-density and low-rise blocks, the estate embodies the modernist principles of its period through its site layout, block spacing, and expansive open green areas.

The green spaces, which make up approximately 75% of the settlement, not only serve visual aesthetics but also provide residents with extensive and accessible areas for social interaction, relaxation, and physical activity. The orientation of the blocks and the overall site plan optimize sunlight and wind flow, enhancing user comfort, while the balance of built and open spaces, together with the landscape design, strengthens the environmental harmony of the area. In this regard, the estate is not merely a collection of housing units but an example of a human-scaled living environment that is integrated with its surroundings.

From a social perspective, the Isbank Housing Estate represent a model of social housing designed to meet the collective living needs of middle-income bank employees and their families. Beyond providing mere accommodation, the estate functioned as a community-oriented environment that supported social relationships, offering a spatial layout that strengthened neighborly ties, facilitated family life, and encouraged everyday social interaction. In this sense, the settlement stands as a significant example that reflects the social housing principles of its period and holds substantial value for community life.

From a historical perspective, the Isbank Housing Estate are significant as one of the earliest examples of modern residential architecture in Turkey. The active involvement of architects such as Lemi Varnalı and Ayhan Böke who embodied the architectural approach of the period further enhances the cultural and historical value of the project. In addition, the housing complex received contributions from notable figures during its construction and serves as an example that reflects the early phases of modern urbanization in Turkey. Its survival to the present day makes it an important record for understanding historical continuity. From a technical standpoint, the Isbank Housing Estate are an example that reflects the modern construction technologies of their time. Reinforced concrete structural systems, the low-rise block typology, and the integrated interior exterior design approach ensure both structural durability and aesthetic coherence.

The planning of interior elements such as kitchens, cabinets, and doors as components of the overall design enhances functionality while offering a level of unity that optimizes spatial use. In this respect, the housing estate can be regarded as a modern residential complex that successfully combines both technical and aesthetic integrity. The collective value and integrity of the settlement are also remarkably high. The arrangement between the blocks, the shared open spaces, circulation relations, and the recurring architectural details all demonstrate a collective design approach. The planning of the landscape, street layout, and common-use areas makes not only the individual buildings but the entire site meaningful as a whole. In this regard, the Isbank Housing Estate represent a rare and valuable example that illustrates how modern residential settlements are positioned within the urban fabric.

When compared to the Cadde Bakırköy Project, the values of the Isbank Housing Estate become even more evident. Cadde Bakırköy offers a denser, more enclosed, and market-oriented type of development, organizing its open green areas in a limited and highly controlled manner. This weakens social interaction and the sense of community, diverging from the open and functional landscape approach of the modernist period. Although technically in line with contemporary standards, the Cadde Bakırköy project does not present an innovative approach; whereas the Isbank Housing Estate were designed with original and pioneering technical solutions for their time. In aesthetic and cultural terms as well, the simple, functional, and environment integrated character of the Isbank Housing Estate clearly stands out when compared to the more decorative and dense form of the Cadde Bakırköy complex.

In conclusion, the Isbank Housing Estate are not merely a residential complex but a holistic example of modern settlement that brings together the social, technical, aesthetic, and environmental approaches of their time. The coherence evident in the planning, landscape design, and block layout, combined with the social and environmental values embedded in the project, demonstrates that this complex is one of the rare examples of modern residential heritage that must be preserved. When contemporary urban transformation projects overlook the values of such settlements, they lead to both historical and social losses. The Isbank Housing Estate therefore, serve as an important reference that embodies the early

applications of modern architecture in Turkey, communal living practices, and design principles harmonious with the environment.

3.1. Strategic Recommendations for the Preservation of Architectural Heritage in Future Urban Transformation Projects

Before urban transformation begins, a comprehensive inventory of modern-era buildings should be prepared. The historical, cultural, social, and technical values of these structures should be identified in detail, and the examples that require preservation should be clearly classified. As seen in the case of the Isbank Housing Estate, not only individual buildings but also the holistic layout of settlements, open spaces, and landscape relationships must be considered among the values to be preserved.

New projects should be designed with regard to the aesthetic and functional integrity of the entire settlement fabric not just individual buildings. Elements such as block configurations, mass void balance, the proportion of green areas, and landscape design should be planned in relation to the surroundings and at a human scale. As in the Isbank Housing Estate, maintaining adequate distances between blocks and optimizing natural light and airflow represent strategic approaches that enhance user comfort.

In modern residential settlements, open green spaces hold critical importance for social interaction, physical activity, and environmental balance. In urban transformation projects, these areas should not be reduced in size or distorted in form; instead, they should be preserved together with natural landscape elements. As seen in the Isbank Housing Estate, plant diversity, accessibility, and the balance between built mass and open space serve as exemplary qualities for both environmental and social sustainability.

The social functions of modern-era buildings and their significance for community relations should be taken into account during design processes. Social housing settlements such as the Isbank Housing Estate carry historical and social value as spaces that support community bonds. In urban transformation projects, it is important to ensure that such spaces are not completely lost and that areas for social interaction are incorporated into new designs as well.

New projects should be designed in harmony with contemporary technologies and materials, without compromising the architectural aesthetic language of the modern period. Elements such as façade character, material selection, and the details of entrances and common areas can be reinterpreted in ways that reflect the spirit of modern heritage. This represents a strategic approach that ensures the aesthetic continuity of modern architecture.

Given that Law No. 2863 does not cover the modern period, special protection statuses or municipality-based preservation programs should be established to safeguard examples of modern architecture. Projects should be planned not only according to economic or functional criteria but with priority given to preserving cultural and historical values.

Urban transformation projects should incorporate participatory processes in which local residents, architects, urban planners, and cultural heritage experts work together. In the case of the Isbank Housing Estate, considering the social and environmental values of the settlement offers an approach that can strengthen public awareness of heritage in future projects. Modern construction technologies and sustainable design solutions should be applied without compromising the historical and aesthetic values of the built environment. Energy efficiency, natural ventilation, solar orientation, and smart building technologies can be integrated in ways that preserve the spirit of modern architectural heritage.

These strategies can ensure that modern residential settlements such as the example of the Isbank Housing Estate are preserved in harmony with contemporary urban transformation practices without losing their inherent value. In this way, modern architecture can be carried into the future with its cultural, social, and environmental dimensions intact.

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SPATIAL ANALYSIS OF THE RELATIONSHIP BETWEEN PLANNED URBAN DEVELOPMENT AND ACTIVE GREEN SPACE DISTRIBUTION: THE CASE OF ISTANBUL

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ABSTRACT

This research examines the relationship between planned urban development and active green space adequacy in Istanbul at the district level for the year 2024. The study evaluates the impact of planned development rate on green space distribution, along with key socio-spatial variables such as population density, income level, and distance to the central business district. The quantitative analysis, conducted using up-to-date data from 39 districts of Istanbul, focuses primarily on revealing relationships between variables through a regression model. The findings indicate that the average amount of active green space per capita in Istanbul is 5.2 m^2, which falls below both the 9 m^2 limit recommended by the World Health Organization and the minimum 10 m^2 standard stipulated by the Spatial Plans Construction Regulation. In unplanned and high-density districts (e.g., Esenyurt, Bağcılar), the amount of green space per capita falls below 1 m^2, while in districts with high levels of planned development (e.g., Sarıyer, Beykoz, Çatalca, Ataşehir, Başakşehir, Şile), it exceeds 10 m^2. Regression results indicate a strong positive relationship between the proportion of planned developed areas and the amount of green space per capita (R^2 = 0.61). Furthermore, access to green space decreases with increasing distance from the central business district. The findings reveal that unplanned urban growth exacerbates spatial inequalities and that the adequacy of green space in Istanbul depends largely on the quality of urban planning approaches.

KEYWORDS: Active green space per capita (m^2), planned development rate, spatial inequality, Istanbul

1. INTRODUCTION

1. 1. Purpose and Scope of the Research

Green spaces play a critical role in the sustainability of urban ecosystems and stand out as one of the fundamental elements that maintain the balance between natural systems and human life. Green spaces have multifaceted functions, such as regulating microclimate, creating carbon sinks, supporting biodiversity, strengthening physical and mental health, and increasing social integration (Tzoulas et al., 2007; Pauleit et al., 2005).

Accordingly, the quality and spatial distribution of green spaces are considered key indicators of quality of life in cities and should be addressed within the framework of the principle of spatial justice in planning processes. Indeed, in many developed countries, urban planning approaches are being restructured within the framework of nature-based solutions aimed at increasing the accessibility of green infrastructure (Apostolopoulou & Kotsila, 2021).

In recent years, rapidly increasing urbanization trends worldwide have led to a significant decline in urban green spaces, both quantitatively and qualitatively. This situation negatively affects a wide range of issues, from ecological sustainability to public health conditions and social justice mechanisms (Haase et al., 2017).

The decline in green spaces results in consequences such as exacerbating the urban heat island effect, weakening ecosystem services, and declining physical and psychological well-being of city residents; it also paves the way for deepening spatial inequalities (Kabisch & Haase, 2014).

This problem is even more pronounced; especially in metropolitan cities, accessibility to green spaces exhibits significant disparities across social groups in Turkey. Socioeconomic status, income level, housing market dynamics, and planned and unplanned development patterns directly shape individuals' opportunities to benefit from green spaces (Gül et al., 2020).

In this context, Istanbul serves as an example of exacerbating social and environmental inequalities due to the fragmentation, reduction, and spatial uneven distribution of green spaces under the pressure of dense and unregulated urbanization. The World Health Organization (WHO, 2022) recommends a minimum of 9 m^2 of green space per person; in Türkiye, this ratio is set at 10 m^2 according to the Spatial Planning Regulation. https://webdosya.csb.gov.tr/db/mpgm/icerikler/ek-2-tablo-17-mayis-20180214143000.pdf

However, in Istanbul, this value is well below these thresholds in many districts. While this amount falls below 1 m^2 in unplanned, high-density areas, it rises to 10 m^2 or more in planned, low-density districts (Urban Atlas, 2024; IBB, 2024).

This inequality in access to green spaces in cities is not merely a problem stemming from the unbalanced distribution of the physical environment; it has significant consequences for social welfare, public health, environmental quality, and principles of environmental justice. The inadequate or uneven spatial distribution of green spaces limits the capacity of communities living in low-income or densely populated areas to benefit from ecosystem services, reduces opportunities for physical activity, and creates a more vulnerable structure to environmental risks (e.g., the heat island effect, air pollution) at the urban level. This demonstrates that spatial and social inequalities, defined as "environmental injustice" in the international literature, are reproduced at the urban level. In the Turkish context, the limited number of studies systematically addressing these inequalities with up-to-date data makes the need for scientific evidence regarding access to green spaces, especially in large metropolitan areas, even more evident.

This research aims to examine the spatial distribution of active green spaces in Istanbul based on 2024 population data and to reveal the determinants of green space adequacy within the context of urban planning. This research aims to establish a scientific basis for the development of sustainable and equitable urban planning policies by quantitatively demonstrating the spatial inequalities observed in access to active green spaces in Istanbul. By analyzing the socio-spatial dynamics that determine green space adequacy in the city, the research contributes to the theoretical literature and has the potential to develop applicable

policy recommendations for decision-makers. In this context, the research provides an analytical framework for understanding the spatial dimension of inequality in the urban environment, contributing to the shaping of future planning approaches in a more inclusive and evidence-based manner.

1. 2. Materials and methods

The research specifically evaluated the effects of key socio-spatial variables, such as planned urban development rate, population density, household income level, and distance to central business districts (CBD), on the amount of active green space per capita. In this context, a multiple regression model was used to quantitatively reveal the relationships between variables, thus developing an analytical framework to identify the structural factors that explain differences in the distribution of green space across different districts of Istanbul. The findings are important for assessing the role of urban planning policies on green space inequality and contributing to decision-making processes aimed at creating more equitable, accessible, and sustainable urban environments. The research is based on current district data obtained from the Istanbul Metropolitan Municipality's (2024) "Green Space Assets Inventory" and the Urban Atlas (2024) dataset. The Istanbul Metropolitan Municipality's 2024 "Green Space Assets Inventory" provides a comprehensive inventory of existing active green spaces.

Urban Atlas (2024) data was used in spatial distribution and land use analyses. This study evaluated only active green spaces; passive green spaces such as cemeteries, median strips, and afforestation areas were excluded. Dependent and independent variables were determined to analyze the factors affecting the distribution of active green spaces. The primary dependent variable was the amount of active green space per capita (m^2/person) in the districts.

Independent variables include the district's total population, average household income, planned developed area ratio, and distance to the central business district (CBD). These variables were used to assess the effects of population density, socioeconomic status, and planned/unplanned development on green space adequacy. Furthermore, the contribution of proximity to city centers to green space access was examined. The spatial assessment in the study was based on a comparative analysis of indicators such as the amount of green space at the district level, population density, planned development ratio, and distance to central business districts. Each of these variables was converted into numerical form and incorporated into the statistical model, revealing spatial patterns among districts through quantitative data analysis rather than map-based techniques. Statistical analyses were conducted using SPSS 28.0. The statistical validity of the model was tested using a significance level of $p < 0.05$, thus reliably assessing the randomness of the effects of the independent variables.

2. GREEN SPACE PLANNING

2.1. Green Space Standards

Green space standards define the amount of green space in a city, measured in square meters, per capita. Setting these standards is a critical process for cities' sustainability and quality of life. Key factors influencing the amount and distribution of green space include needs (requirements), population, city size, geographic location, climate, and density of use (Aksoy, 2001).

Green space requirements vary depending on demographic and socioeconomic factors such as age, income, education, occupation, and living space. For example, different age groups or segments of the population with different income levels may have different expectations of green space. The intensity of green space use also plays a significant role in setting standards; the densities for recreation, recreation, sports, and entertainment vary. Particularly in large cities, the inadequacy of green space poses a constraint on these requirements (Yıldızcı, 1982). Population size and distribution within the city are central to determining

green space requirements, as the size and distribution of green space are directly related to population structure (Önder, 1997).

When developing green space standards, the question of whether a decreasing standard system will be used in response to a growing population is of paramount importance. Existing green space standards should be a determining factor, particularly for the city's environmental development and future growth. In urban centers and densely populated areas, achieving the proposed standards through urban renewal projects is often impossible. Therefore, the increasing standards inherent in new settlements should be preserved, and their reduction should be avoided in line with environmental management objectives. Internationally, defining recreational standards has become mandatory in urban and regional planning studies. While similar approaches exist across countries, each country has developed and implemented standards tailored to its own specific circumstances. The United States offers a prominent model for urban green space standards worldwide, and these standards are dynamically revised from time to time. These revisions reflect an effort to adapt to changing urban needs, environmental sensitivities, and scientific findings. The American green space standards system is based on an approach that varies according to population size. For example, as in the past, specific green space standards, such as 20 m^2 per person in cities with a population greater than 500,000 and 13 m^2 per person in cities with a population greater than 1 million, are applied (Yıldızcı, 1982). This suggests that the amount of green space per person tends to decrease as the population increases.

The American approach differs from Europe in terms of the city's physical structure and lifestyle and culture. Historically, the creation of large-scale public parks like Central Park in the United States signaled an early recognition of the importance of urban green spaces. Today, standards are being considered from a more comprehensive perspective, encompassing not only the area per square meter but also the functionality, accessibility, quality, and biodiversity contribution of green spaces. In modern American urban planning, smart growth principles and green infrastructure solutions play a central role in the development of green space standards. These approaches encompass not only parks but also various types of green spaces, such as green streets, green roofs and permeable surfaces for stormwater management, community gardens, and ecological corridors. To enhance the resilience of cities and mitigate the impacts of climate change, green spaces are no longer viewed solely as recreational spaces but also as critical infrastructure components that provide urban ecosystem services, improve air and water quality, reduce the urban heat island effect, and support biodiversity (US EPA). Urban planning officials are increasingly focusing on elements such as ensuring green spaces are accessible to all residents and encouraging community participation. This evolution is part of American cities' journey to become more sustainable, livable, and resilient.

European countries have adopted a more holistic and multi-layered approach than the United States in establishing urban green space standards. This approach encompasses not only directly usable green spaces within the urban fabric, such as playgrounds, sports fields, and parks, but also larger-scale ecological areas, such as green belt zones, located outside urban boundaries. This demonstrates that green spaces, as part of the city, are critical elements that provide not only recreational but also ecological and environmental benefits (Aksoy, 2017).

Green space policies in Europe are based on the principle of accessibility. This approach aims to ensure that every city resident has access to a quality green space within a reasonable walking or cycling distance of their home. In line with this accessibility principle, urban planning envisions various green features. For example, in London, the goal is for every home to have a public green space within 400 meters, while in Berlin, the focus is on creating extensive, interconnected green networks throughout the city (European Environment Agency, 2020).

This integrative system, adopted in Europe, is based on the idea that the need for green spaces increases as settlements grow and cities become more distant from nature. The lifestyle changes and environmental challenges brought about by urbanization reveal that green spaces are not merely a luxury but a necessity for urban sustainability and human health. Current research points to the numerous benefits of urban green

spaces, such as promoting physical activity, improving mental health, increasing social interaction, and reducing the urban heat island effect (Lafortezza et al., 2018).

Policies such as the European Commission's EU Biodiversity Strategy 2030 prioritize increasing green spaces in cities and supporting biodiversity. This aims to make cities more resilient with nature-based solutions and to use green infrastructure to combat climate change (European Commission, 2020). In this context, European cities are developing policies that prioritize not only quantitative standards but also the ecological quality, connectivity, and multifunctionality of green spaces. Urban green space standards in Türkiye are primarily determined by the Regulation on the Principles of Zoning Plan Preparation and Amendments, based on Zoning Law No. 3194. This regulation stipulates the amount of active green space per person as 10 square meters (m^2). However, this uniform standard has long been a criticism of green space planning in Türkiye. The fundamental problem is that this standard lacks detailed criteria regarding the typology, content, functionality, and size of active green spaces.

As Aksoy (2014) noted in her research, this deficiency has led to a "haphazard" approach to the planning and implementation of green spaces, ultimately hindering the creation of healthy and high-quality public spaces in cities. Given Türkiye's diverse geographic, climatic, and demographic characteristics, applying a single standard to all cities is insufficient. For example, the type and amount of green space needed in a metropolitan area differs significantly from the needs of a small Anatolian city.

Current planning approaches and international examples strongly emphasize that green space standards should be multidimensional, flexible, and context-sensitive. The literature indicates that approaches focused solely on quantity are insufficient, and that the quality, accessibility, functional diversity, and capacity to provide ecosystem services of green spaces should also be incorporated into standards (Lassandro et al., 2024). In this context, integrating the following aspects into standards is crucial for Turkey: Green spaces should not only be recreational areas; they should also encompass diverse functions such as active sports areas, children's playgrounds, community gardens, ecological corridors, and urban forests. Separate size and amenities standards should be established for each functional type. The geographic distribution of green spaces within the city should ensure equal access for all neighborhoods and socioeconomic groups. For example, accessibility to specific types of green spaces within walkable distances could be standardized.

Green spaces should be designed not only for human use but also for the health of the urban ecosystem and the preservation of biodiversity. This includes elements such as the use of native vegetation, water management (such as rainwater harvesting), and wildlife-friendly designs. Green spaces should provide climate resilience benefits such as reducing the urban heat island effect, improving air quality, and providing natural solutions for rainwater management. The active participation of local residents and relevant stakeholders in green space planning processes ensures the creation of spaces that are more appropriate to their needs and are embraced. Revising and refining existing standards in Türkiye in line with these current approaches is a critical step for the sustainability of our cities, their adaptation to climate change, and the quality of life of the public. Otherwise, uniform and inadequate standards will continue to lead to the emergence of "unhealthy spaces."

3. SPATIAL DISTRIBUTION OF ACTIVE GREEN AREAS IN ISTANBUL

Spatial analyses are a fundamental starting point for assessing whether green spaces in cities are distributed appropriately to meet social needs. Jim (2004) notes that different land use types and urban development patterns create significant differences in the geometric shapes, spatial distribution, and composition of green spaces. In this context, the total amount and spatial pattern of green spaces are a prerequisite for both assessing the current situation and monitoring change over time.

This research conducted a district-level adequacy assessment of existing active green spaces in Istanbul, specifically by analyzing their square meters per capita, total numerical, and spatial size. This assessment

ensures that access to green spaces throughout the city is addressed within the framework of spatial justice and sustainability principles.

3.1. Analysis of Active Green Space Adequacy with Regression Model

Regression analysis is an analytical method that aims to measure and explain the statistical relationship between a dependent variable and one or more independent variables.This model quantitatively expresses the relationship between variables through an equation developed from existing data (Lawrence, 1980).

Multiple regression analysis was applied to analyze the determinants of the amount of active green space per capita in this research. Active green space per capita (m^2/person) was defined as the dependent variable, while population size (x_1), average income level at the district level (x_2), proportion of planned developed areas (x_3), and distance of the districts to the city's Central Business District (CBD) (x_4) were included as independent variables in the model. The effects of socio-demographic and physical characteristics of districts on access to active green space were empirically tested in this research.

3.1.1. Regression Model

Regression analysis was conducted to determine the relationship between the amount of green space per capita and the demographic, socioeconomic, and physical characteristics of regions. The regression model used in the study, in its simplest form, expresses the relationship between a variable and one or more independent variables. It is also possible to express these variables through equations generated using existing data (Lawrence, 1980).

3.1.2. Defining Hypotheses and Variables

The study's primary hypothesis is that spatial inequality in urban green spaces is significantly correlated with variables such as population density, socioeconomic status, urban planning level, and distance to central areas. The variables used in this analysis are presented in Table 1. The amount of active green space per capita (m2/person) was considered the dependent variable, while population size (x_1), per capita income (x_2), planned developed areas (x_3), and the distance of districts to the city's Central Business District (CBD) (x_4) were considered the independent variables.

During the data analysis process, a multiple linear regression model was constructed using SPSS 28.0 statistical software, testing the effects of independent variables on green space adequacy. The analysis was structured to identify the linear relationship between variables and to reveal the structural factors underlying spatial inequalities.

Variable	B Coefficient (β)	Standard Error	t-value	p-value	Significance
Constant (β_0)	3,142	0,685	4,59	0,000	***
Population (x_1)	–0,012	0,005	–2,40	0,021	**
Per capita income (x_2)	0,008	0,003	2,67	0,011	**
Planned developed area (x_3)	0,024	0,007	3,43	0,002	***
Distance to CBD (x_4)	–0,015	0,006	–2,50	0,017	**

Table I*. Regression Results (N=39 districts, 2024).*

*** p < 0.05 indicates significance levels,*

**** p < 0.01*

4. FINDINGS AND INTERPRETATION

Multiple linear regression analysis was conducted using data from 39 districts in Istanbul to identify the key socio-spatial variables affecting the amount of active green space per capita in this study. The four independent variables analyzed within the model were population, per capita income, the proportion of planned developed areas, and distance to the Central Business District (CBD). The regression model findings are presented in Table 1.

Negative coefficients indicate a negative effect of the variable on green space, while positive coefficients indicate a direct effect. The regression model was found to be generally significant ($F(4,34) = 13.28$; $p < 0.001$), and the explained variance with $R^2 = 0.61$ was considered moderate to high. The overall performance and statistical validity of the model are detailed in Table 2.

Model Criteria	Value
R^2 (Explained Variance)	0,61
Adjusted R^2	0,57
F (4,34)	13,28
p (model overall)	0,000
Variance Explanatory Power	Medium-High

Table 2. *Regression Model Performance Measures*

These findings show that the independent variables in the model have a strong explanatory power in explaining the amount of active green space per capita at the district level in Istanbul.

4.1. Planned Developed Area Ratio

According to the results in Table 1, the variable with the strongest and most significant effect on green space per capita is the proportion of planned developed areas ($\beta = 0.024$; $p = 0.002$). This finding demonstrates a strong positive relationship between organized zoning practices and urban planning, and green spaces. In districts such as Ataşehir, Başakşehir, and Beylikdüzü, which have undergone planned development, the amount of active green space per capita varies between 8 and 12 m^2. These districts are examples of planned development, particularly after the 2000s, supported by public green space investments**.**

4.2. Population Impact

Table 1 shows that the population variable has a negative and significant effect (β = −0.012; p = 0.021). This indicates that the amount of green space per capita decreases with increasing population density. In districts with populations exceeding 700,000, such as Esenyurt, Pendik, and Bağcılar, this value drops below 1 m^2. These district-level values are presented in detail in Table 3.

The findings indicate that urban density in some areas of Istanbul suppresses access to green space, and these areas fall below critical thresholds for quality of life.

4.3. The Role of Per Capita Income

The per capita income variable shows a positive and significant effect in Table 1 (β = 0.008; p = 0.011). However, it can be argued that this effect is not absolute and becomes more pronounced with planned development. For example, the amount of green space is low in the high-income districts of Kadıköy and Bakırköy due to the high density of buildings in these areas. In contrast, higher rates of green space are observed in middle-income but planned-developed districts such as Ümraniye and Tuzla (Table 3). This finding suggests that income level, rather than being a sole determinant, becomes significant in conjunction with planning processes.

District	**Population (2024)***	**Green Area Per Capita (m^2/person)**
Şile	48.936	25,17
Beykoz	245.440	16,71
Çatalca	80.399	13,18
Ataşehir	414.866	11,45
Başakşehir	520.467	10,71
Sarıyer	342.582	10,04
Beylikdüzü	415.290	9,45
Silivri	232.156	9,13
Tuzla	301.400	8,85
Çekmeköy	306.739	8,46
Adalar	16.979	7,95
Büyükçekmece	280.528	6,69
Ümraniye	727.819	5,19
Arnavutköy	344.868	5,13
Sancaktepe	502.077	4,92
Bakırköy	219.893	4,89
Beşiktaş	167.264	4,75
Eyüpsultan	420.706	4,65
Maltepe	524.921	3,99
Üsküdar	512.981	3,56
Kartal	475.859	3,31

Kadıköy	462.189	2,87
Şişli	263.063	2,67
Küçükçekmece	789.033	2,4
Beyoğlu	216.688	2,19
Sultanbeyli	369.193	1,94
Zeytinburnu	278.344	1,84
Kağıthane	444.820	1,72
Güngören	264.831	1,51
Fatih	354.472	1,47
Gaziosmanpaşa	479.931	1,41
Avcılar	440.934	1,41
Bayrampaşa	268.303	1,3
Sultangazi	532.601	1,23
Bahçelievler	560.086	1,19
Pendik	749.356	1,16
Esenler	423.625	1,03
Esenyurt	988.369	0,79
Bağcılar	713.594	0,65

Table 3. *District-Based Green Space Assessment*

**https://www.nufusu.com/ilceleri/istanbul-ilceleri-nufusu*

4.4. Distance to the Central Business District (CBD)

As seen in Table 1, the distance variable to the CBD also exhibits a significant negative effect (β = −0.015; p = 0.017). This finding indicates that the amount of active green space per capita decreases as one moves away from the city center. Construction processes carried out without considering the integration of green space in the rapid development corridors in the north of the city further deepen this trend.

5. CONCLUSION AND EVALUATION

The findings of this study clearly demonstrate that active green spaces per capita in Istanbul are profoundly affected not only by physical and environmental factors, but also by socio-economic and spatial factors. The analysis results presented in Tables 1, 2, and 3 emphasize the need for a multidimensional and holistic approach to green space planning. In particular, variables such as planned development level, population density, and distance to the city center (CBD) have a significant impact on green infrastructure; in this context, socio-spatial inequalities become a determining factor in access to green spaces.

The research findings are one of the rare studies that statistically demonstrate that active green spaces in Istanbul are not distributed fairly, evenly, and accessible. The regression analysis used in the study showed that the primary variable affecting the amount of green spaces per capita is the planned development rate. This result highlights the need for institutionalization of a "green infrastructure priority approach" in urban planning processes and its adoption by decision-makers (Sun et al., 2020).

The rapid urbanization process seen in developing countries often leads to the conversion of green spaces into other uses that generate economic returns. In this context, research findings demonstrate that social

justice-based green space planning has become a necessity, especially in metropolitan cities. In this respect, Türkiye provides a compelling example of studies focusing on "green justice" and "accessibility" in the literature, such as Herzele & Wiedemann (2003) and Kline (2006).

The average active green space per capita in Istanbul by 2024 has been determined to be 5.2 m^2. This value is well below the minimum green space per capita standard of 9 m^2 recommended by the World Health Organization (WHO, 2022). When evaluated on a district-by-district basis, this ratio drops to critical levels of 0.65 m^2 in some districts, while in areas with planned, developed areas, this ratio can exceed 12 m^2 (Table 3). The research results revealed that districts with a high level of planned development, such as Şile, Beykoz, Çatalca, Ataşehir, Başakşehir, and Sarıyer, also have high rates of green space. Conversely, districts with unplanned development and rapid construction, such as Sultanbeyli, Zeytinburnu, Kağıthane, Güngören, Fatih, Gaziosmanpaşa, Avcılar, Bayrampaşa, Sultangazi, Bahçelievler, Pendik, Esenler, Esenyurt, and Bağcılar, have significantly lower per capita green space. This suggests that access to green spaces is not only a physical issue but also related to socio-economic and administrative factors (Wolch et al., 2014; Anguelovski, 2016).

Particularly in metropolitan areas like Istanbul, where spatial inequalities are pronounced, green space planning based solely on square meter calculations is insufficient. A multidimensional assessment model should be developed that integrates criteria such as accessibility, functionality, socio-demographic structure, and post-disaster use. In this context, it should be noted that, in line with disaster-resilient urbanization goals, green spaces should be considered not only for recreational purposes but also as post-disaster gathering spaces.

In light of the findings of this research, the following planning and policy recommendations, specific to Istanbul but generalizable, have been developed:

Green space standards should be updated; in addition to square meters per capita, "differential green planning models" should be adopted, taking into account the development levels of districts, needs analysis, and environmental risk profiles (Byrne & Wolch, 2009). Green infrastructure should be made a mandatory element in urban transformation projects, and this requirement should be legally guaranteed through plan notes and regulations.

Open spaces reserved for post-disaster use should be planned not only for evacuation purposes but also as continuously accessible public green spaces, and these areas should be placed in strategic locations within the urban fabric (Jabareen, 2013).

In line with the principle of spatial justice, green space investments in socio-economically disadvantaged areas should be prioritized, and these areas should be designed to be accessible, multifunctional, and community-based (Anguelovski et al., 2020). Green space indices that take spatial inequalities into account should be established in the strategic plans of local governments and metropolitan municipalities, and these indices should be integrated into monitoring and evaluation mechanisms.

Annex 2 of the Spatial Planning Regulation (MPYY), currently in force in Turkey, classifies green space standards as open and green spaces, does not distinguish between active and passive green spaces, and does not provide clear guidance on different functional types. As seen in Article 24, paragraph 3 of the regulation, the lack of a detailed classification of green spaces creates uncertainty in urban planning processes. Furthermore, Law No. 6306 on the Transformation of Areas at Disaster Risk does not contain any specific regulation regarding green spaces. https://resmigazete.gov.tr/eskiler/2012/05/20120531-1.htm

However, the need for green open spaces at various scales during and after disasters is a vital necessity. Therefore, urban green systems planning and urban transformation projects should be reconsidered in this context, based on post-disaster usability, accessibility, and environmental health indicators.

In conclusion, the primary objectives of a green space strategy to be developed in Istanbul should be protecting existing green spaces and improving their quality, creating new spaces in regions where green

spaces are insufficient, ensuring a balanced and equitable distribution throughout the city and planning green spaces to establish ecological connections. In addition, as suggested in Herzele and Wiedemann (2003), a green justice mapping system specific to Istanbul could be developed by evaluating time-sequence change analyses, socio-economic vulnerability data, spatial access models, and different green space typologies.

This research offers an original contribution to both urban planning and environmental justice literature by analyzing current spatial, socioeconomic, and administrative data on Istanbul's active green space system through multilayered analyses. The findings can serve as a basis for comparative research not only for Istanbul but also for other developing major metropolises. In building sustainable, equitable, and inclusive cities, green spaces should no longer be considered a mere luxury but a fundamental right to life.

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ASSESSING THE ARCHITECTURAL HERITAGE OF THE REPUBLICAN PERIOD OF TÜRKIYE: EXPERIENCES IN THE CITY OF LÜLEBURGAZ

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ABSTRACT

Since its emergence in the mid-20th century, conservation of heritage of the recent past is a very challenging topic in many aspects. Although there is a growing interest in this subject today, one of the biggest issues is lack of representation. In the last three decades, many iconic buildings around the world have been recognized as heritage at the national and international level. However, examples of civil architecture that make up a large part of today's built environment are not adequately represented. It can be stated that, one of the main reasons for this outcome is public and professional bias towards the architecture of the 20th century. Moreover, heritage listing criteria at the national level can be a legally limiting factor for the heritage of the recent past. In Türkiye, the legal listing criteria centers around the heritage built until 1900 and the Early Republican Period, making the representation of this heritage especially challenging in the rural areas.

Lüleburgaz, which has a rich culture dating back to 4000 BC, encompassing the Roman, Byzantine, Ottoman, and Republican periods, conveys this feature to the present day with its monuments and civil architecture. Beginning from the last quarter of the 19th century until 1922, the built environment of the city, which was a conflict zone for almost half a century, suffered a serious destruction. During this time, the city began to be reshaped with the migrations from Western Thrace. After the proclamation of the Republic, the traditional urban fabric of Lüleburgaz has rapidly transformed with architectural productions that prioritize restorations after the war, as well as the modernization efforts felt in all areas of life. During the first three decades of the Republic, the municipality and the state gave priority to projects such as social housing for immigrants, mass housing for flood victims, and construction of public buildings for basic health and education needs, as well as urban planning. After the second half of the century, 2-3-story residences, new public structures, and multi-story buildings on the periphery of the city were constructed. By the beginning of the 21st century, cultural development projects were prioritized by the Lüleburgaz Municipality, and many public cultural structures were built through national competitions.

This paper aims to convey the heritage survey outcomes carried out in the city of Lüleburgaz between September 2020 and October 2021, and to critically discuss the various aspects of assessment process through the experiences of the research team. As part of the Lüleburgaz Cultural Inventory Project, initiated in 2020 with the protocol signed between Mimar Sinan Fine Arts University and the Local Municipality of Lüleburgaz, over 400 buildings of the republican period were identified as heritage in the city center of Lüleburgaz, 56 of which were proposed for registration. The methodology of the study included archival research, review of the existing literature on Lüleburgaz history and urban morphology, identification of the architectural production in the existing urban fabric shaped with modernization, and interviews with the stakeholders. One of the main results of the study was that, while revealing the architectural heritage

potential of the city of Lüleburgaz, this heritage is at risk due to intense development activities. However, the critical problem lies in the fact that many modern structures are still not recognized as “heritage” by the local population and the decision makers, consequently have not been legally registered. This case illustrates a broader challenge widely debated in the international conservation field: the vulnerability of 20th century architectural heritage. By documenting both the tangible assets and their subsequent neglect, the study contributes to the discussion on how heritage inventories can act not only as technical tools but also as instruments for questioning cultural and political priorities in heritage recognition.

KEYWORDS: 20th Century Heritage; Modern Heritage; Heritage Inventory; Urban Heritage.

1. INTRODUCTION

As a product of the culture in which it exists, the built environment (i.e. architecture and cities) is important and worthy of preservation due to the cultural values represented in its physical form. Viewed from this perspective, the architectural heritage of the Republic reflects a nation's post-war reconstruction and its efforts to exist in the modern world. Approaching it with this awareness makes it possible to focus on what it represents rather than the heritage itself.

Today, the architectural heritage of the Republican era, which falls within the scope of '20th century architectural heritage', faces many conservation issues, partly due to its relatively recent past. In particular, the failure to define civil architecture structures that do not have monument status as heritage leads to their loss under the pressure of rapid urbanization. Despite the significant efforts made to protect cultural assets throughout the more than 100-year history of the Republic, the risks facing our Republican era architectural heritage continue to increase.

The effects of globalization began to be seen in Turkey from the last quarter of the 20th century onwards. The increase in mass communication and access to current technologies has also been reflected in the transformation of urban space in this age of speed. This pace of transformation is causing the disappearance of the architecture produced in the short 20th century, as Hobsbawm puts it (Hobsbawm 1994), and the spatial traces of the last century's living practices, economic, social, and political conditions are rapidly fading away. Documentation efforts on 20th-century architecture are one of the primary ways to record the conditions of this dynamic era for future generations. This paper aims to highlight the heritage potential identified through an inventory study conducted in Lüleburgaz, one of many Anatolian cities possessing a legacy of Republican-era architecture, while also drawing attention to conservation issues.

2. THEORETICAL FRAMEWORK

The study adopts an approach that considers Lüleburgaz, a city with a history dating back thousands of years, as a multi-layered settlement shaped by successive historical processes. In line with the Historic Urban Landscape concept adopted by conservation experts internationally (UNESCO 2011), the layers of the city extending from ancient times to the present require that not only the monumental structures that have survived to the present day but also traces from the recent past be defined as cultural heritage. Within this framework, it is important to identify and interpret Lüleburgaz's development in the 20th century from a cultural heritage perspective.

Modernization, which began under the term of "westernization" in the last quarter of the Ottoman Empire, became the fundamental policy of the Republic of Turkey from the first quarter of the 20th century onwards. The impact of modernization, experienced in every area of political, economic, and social life, was felt in the built environment, particularly in large cities and Anatolian towns. The modern urban fabric, which incorporates new building types geared toward a modern lifestyle, has diverged from the traditional with its city squares and grid-system road network. However, in most cases, the traditional and modern urban fabrics have been harmoniously integrated, forming the Republican era layer of historic cities.

The 20th-century layer of the built environment is largely overlooked by its inhabitants and decision-makers in cities, and is sometimes easily dismissed. Discussions about the need to preserve buildings from this period, which constitute the most populous building stock in cities, date back to the 1980s. DOCOMOMO, which carries out studies on the documentation and preservation of modern architectural heritage, has emphasized the importance of drawing the attention of the public, authorities, professionals, and academics to this heritage since its establishment (DOCOMOMO International 2014). ICOMOS, meanwhile, has been involved in initiatives to recognize and preserve 20th-century heritage since the 1990s, establishing the ICOMOS 20th Century International Scientific Committee (ICOMOS ISC20c) in 2004. In the Madrid-New Delhi Document, which ICOMOS ISC20c updated and republished in 2017, it emphasizes that 20th-century heritage is at risk due to urban development pressures and that lack of awareness poses a significant threat.

Contemporary conservation theory emphasizes the adoption of a value-based conservation approach for the protection of 20th-century heritage and the need to protect heritage as a whole, including both its tangible and intangible values. ICOMOS ISC20c argues that change is inevitable, but it must be carefully managed when heritage is concerned (ICOMOS ISC20c 2017: 7). DOCOMOMO, on the other hand, recommends the preservation and adaptive reuse of modern architectural heritage for the sustainability of the built environment (DOCOMOMO International 2014).

The Twentieth-Century Historic Thematic Framework, published in 2021 in collaboration between the Getty Conservation Institute and ICOMOS ISC20c, was developed as a tool to assist experts in conserving, identifying, and interpreting this heritage. The first theme of the 10-theme framework, Rapid Urbanization and the Growth of Large Cities, relates the development of 20th-century cities to the social and technological developments of the period. The city of Lüleburgaz aligns with this theme in many ways, giving its heritage from the Republican era international significance. The heading "Mass Migrations to Urban Areas" under this theme covers migration from rural to urban areas as well as refugee migrations influenced by 20th-century wars, evaluating the new settlement areas created for migrants in this context. Another heading addressed under this theme, "Renewing and Redeveloping the Inner City and Urban Core," deals with the redevelopment of cities after wars or natural disasters. Lüleburgaz's early republican-era architecture, which rose again after the War of Independence, and the Seylap Houses built after the 1956 flood disaster are examples of this heritage.

The focus on conserving 20th-century heritage in Turkey emerged in parallel with the international conservation theory. A significant portion of public buildings constructed during the Early Republican Period, which can be dated from the founding of the Republic to the 1950s, were placed under protection before the end of the 20th century. However, it is still possible to say that both registered and unregistered buildings remain under threat today. One of the main reasons for this threat is that heritage law is open to interpretation against 20th-century heritage and modern architectural heritage (Republic of Turkey 1983). In some cases, decision-makers can revoke existing registration decisions by referring to the same articles of the law. Another reason is the use of Law No. 6306 (Republic of Turkey 2012), known as the Disaster Law, to argue that reinforced concrete structures can be demolished on the grounds that they do not provide earthquake safety. In Turkey, where most of the land is located in earthquake zones, many structures that are part of 20th-century heritage are being demolished on the grounds of structural inadequacy.

The 20th-century architectural heritage at risk today in Lüleburgaz constitutes significant evidence of the city's Republican era urbanization, social life, and economic and political conditions. Highlighting and sharing the values of this heritage will be the first step in raising awareness for its conservation.

3. METHODOLOGY

3.1. Research Design

The inventory work was prepared as part of the Lüleburgaz City Cultural Inventory Project, which began in November 2020 in collaboration between Lüleburgaz Municipality and Mimar Sinan Fine Arts University (MSFAU). Within the scope of the project, researchers focused on the city's immovable cultural assets, specifically its civil architectural heritage. Due to the Covid-19 pandemic, the Lüleburgaz City Cultural Inventory Project exceeded its planned duration and had to limit its scope to the city center and its immediate surroundings.

Although this study aimed to identify Lüleburgaz's civil architectural heritage, it was understood that Ottoman-era structures dating back to before the 20th century had largely not survived to the present day. Therefore, the studies were carried out with a focus on the civil architectural heritage of the Republican era. The research design involves preparing digital inventories of civil architecture in Lüleburgaz, evaluating the importance of the structures that constitute the heritage, and revealing the city's Republican era architectural heritage.

Data collection for the study was structured around three main sources: archival materials, literature review and field-based documentations. Archival research included examination of early municipal development plans, such as Architect Necmi Ateş's 1948 development plans and cadastral maps from Lüleburgaz Municipality Archives, historical photographs, and archival documents from State Archives. The literature review focused on scholarly studies (Uç 1942; Timor 1992), local histories (Arslan 2010), and previous surveys on Lüleburgaz conducted by MSFAU Urban and Regional Planning Department during the 2018-2019 academic year. The review process provided a foundation for the interpretation of architectural production in Lüleburgaz and also helped to determine the locations of the newly formed neighborhoods throughout the 20th century.

Based on information obtained from written documents, the city center and its development direction were interpreted and mapped together with archaeological and urban areas, forming the basis for the inventory work. In line with this information, taking into account the city's development direction, the fieldwork was carried out in three stages, starting from the central archaeological sites and expanding towards the periphery.

Field-based documentation conducted between September 2020 and October 2021 constitutes the core of the survey data. The researchers created a standardized survey form developed specifically for the project, following internationally accepted documentation principles (ICOMOS 1996). In order to be efficient during COVID-19 conditions, the researchers conducted a preliminary digital survey using Lüleburgaz Municipality's City Guide (Lüleburgaz Belediyesi 2020) and Google Maps Street View (Google 2020), allowing for surveys dating back to 2014. During this process, each building that has a heritage potential is recorded on the inventory list through descriptive notes, photographs, address and coordinates. With this preliminary inventory list, an actual survey was conducted at the site by the researchers which enabled the team to determine many modern heritage buildings that have been demolished. During the surveys 439 buildings were recorded and categorized within an analytical framework.

3.2. Criteria and Process of Identification

The criteria for identifying and classifying the civil architectural heritage in Lüleburgaz were developed through a comparative assessment of existing value frameworks which are recognised nationally and internationally. In order to ensure contextual relevance, a site-specific inventory form was designed for the project.

Researchers have based their assessment of Lüleburgaz's heritage from the Republican era on the values defined by DOCOMOMO International and DOCOMOMO Turkey for modern architectural heritage, the value categories established by ICOMOS ISC20c specifically for 20th-century architectural heritage, and the value definitions adopted by conservation experts in Turkey (ICOMOS Turkey 2013). DOCOMOMO International evaluates modern architectural heritage based on technical value, social value, cultural and aesthetic values, canonical status and historic/reference value (DOCOMOMO ISC/Registers 1998). DOCOMOMO Turkey adopts these categories and narrows to technical value, social value, cultural and aesthetic values, and historical value. ICOMOS ISC20c on the other hand, highlights the historical, scientific, aesthetic, social, spiritual and natural values for assessing the 20th-century heritage (ICOMOS ISC20c 2017). ICOMOS Turkey defines the heritage values in national context and introduces authenticity, integrity, historical value, evidential value, aesthetic-artistic value, technical and technological value, rarity value, group value, and use values (ICOMOS Turkey 2013).

Following a comparative analysis of these values, researchers determined a set of core values deemed most relevant for the context of Lüleburgaz. These included: authenticity value, rarity value, evidential value, environmental (contextual) value, use value, historical value and technical value. For these values context context-specific attributes were defined to operationalize the criteria. Accordingly, buildings were

evaluated based on their function, construction system, level of authenticity (classified as high, medium or low), level of structural integrity (classified as high, medium or low) and construction date or period.

Inventory form included systematic recording data such as inventory number, address, neighbourhood information, cadastral information, photographic documentation, current existence status (standing or lost), and legal protection status (registered or non-registered). Additional information for each structure was also documented for comparative analysis, such as number of storeys, building entrance configuration, and position of the building within the parcel. Researchers identified a total of 439 buildings using the inventory form created, classified and evaluated them analytically, and recommended 56 structures to be registered as cultural heritage.

The research was shaped by several limitations which influenced both the process and the scope of the documentation. The most significant constraint was COVID-19 pandemic, during which travel restrictions and social distancing requirements affected the research teams mobility and limited the duration of on-site works. These restrictions also encouraged the adoption of preliminary digital survey methods. Being a limitation, this approach enabled the researchers to detect the rapid urban transformation within the city. Another limitation involved restricted access to the buildings, which were privately owned. As a result, interior surveys could not be conducted for most of the structures. Despite these constraints, researchers were able to interact with the building owners and users, who provided valuable information about the structures such as construction dates, building alterations, transformations and in some cases names of the original architects. These information were cross-checked and verified with municipal archival records

4. FINDINGS: THE LÜLEBURGAZ INVENTORY

4.1. Historical and Morphological Background of Lüleburgaz City

Lüleburgaz's strategic location in the Thrace Region and its position on a road route that has existed since ancient times make it one of the most important settlements in the region. Lüleburgaz, the largest district in Kırklareli in terms of area, is built on the alluvial basin of the Ergene River, surrounded by hills 40-50 meters above sea level (Timor 1992, 64). The city is also a historic town located on the banks of the Lüleburgaz stream, a small tributary of the Ergene River (Kiel 2003, 255). An important factor in Lüleburgaz's historical geography is its location on an ancient road route passing through fertile lands. This route, known as the “Via Militaris” (Roman Military Road) during the Roman period, was referred to as Ortakol or the Istanbul Road during the Ottoman period. The tumuli and a few architectural remains within the district boundaries carry traces of the ancient settlement to the present day (Akbulut, Özgen, Karakoç 2021, 3). The city was originally a Thracian settlement called Bergule, and during the Roman period it was named Arkadiopolis (Kiel 2003, 256).

After becoming a part of the Ottoman realm in the 14th century, Lüleburgaz continued to develop and emerged as a caravan stop and district center in the 16th century (Kiel 2003, 256). The city center was located around the Sokullu Mehmet Paşa Complex, which is still the most important part of the city today. According to Evliya Çelebi's description in the mid-17th century, Lüleburgaz was a well-maintained town in the middle of the plain, with 150 houses, six neighborhoods, and five mosques (Arslan 2010, 184). However, from the last quarter of the 19th century onwards, the city was devastated by events such as the War of 1877-78, the Balkan Wars, and the Greek occupation of 1920-1922, and was subjected to large-scale migrations (Pakyürek 2019, 11-12; 118-119). Until the first quarter of the 20th century, the urban fabric was limited to the neighborhoods of Dere and Yılmaz, which formed the core settlement. However, starting from the 1920s, the city continued to expand eastward and southward with the establishment of new neighborhoods (including immigrants who arrived as part of the population exchange under the Treaty of Lausanne). Today, Lüleburgaz has two protected areas: a first- and third-degree archaeological site that includes ancient city walls, and an urban site that encompasses the Sokullu Complex and its immediate surroundings.

Throughout the 20th century, Lüleburgaz's urban development underwent a gradual transformation from a traditional core to modern planned settlements. Due to the destruction and population changes following the Greek occupation (1920–1922), there was no significant construction activity in the first quarter of the Republic; settlement continued in a limited manner around the organic fabric (Dere and Yılmaz neighborhoods) east of the stream (Arslan 2010, 185; Timor 1992, 239). New inhabitants who arrived after the 1924–1930 population exchange settled in areas previously occupied by Greek houses, resulting in a continuity of morphological use at the parcel-scale (Arslan 2010, 162–163). In contrast, the settlements established by the state for immigrants from Bulgaria starting from the 1930s brought the city its first examples of modern settlement with their grid-plan street layout and planned parceling (Timor 1992, 236; Arslan 2010, 163). During the same period, the establishment of a new neighborhood with modern residences along the station axis as part of the municipality's urban development efforts in the 1940s is one of the early examples of the transition from traditional organic design to geometric morphology (Uç 1942, 10).

After the 1950's, the city's development direction became clear and intensive construction began. Repeating river floods limited the settlement's expansion towards the west and directed urban growth towards the East and South along the train station axis. After 1955, settlement expanded towards the North where the new military facilities were built. (Timor 1992, 235; Arslan 2010, 186) During this period, modern planning characteristics were strengthened in neighborhoods such as Kurtuluş, Özerler, and Yıldırım, both through post-disaster public housing projects and through a grid-plan street layout. From 1970s onwards, the replacement of two- to three-story housing typologies with four- to five-story reinforced concrete apartment buildings, combined with the demolition of early civil architecture examples in the center and their conversion into multi-story commercial buildings, transformed Lüleburgaz's morphology into a dense, angular, modern urban fabric (Göral 1963, 27; Timor 1992, 240-241).

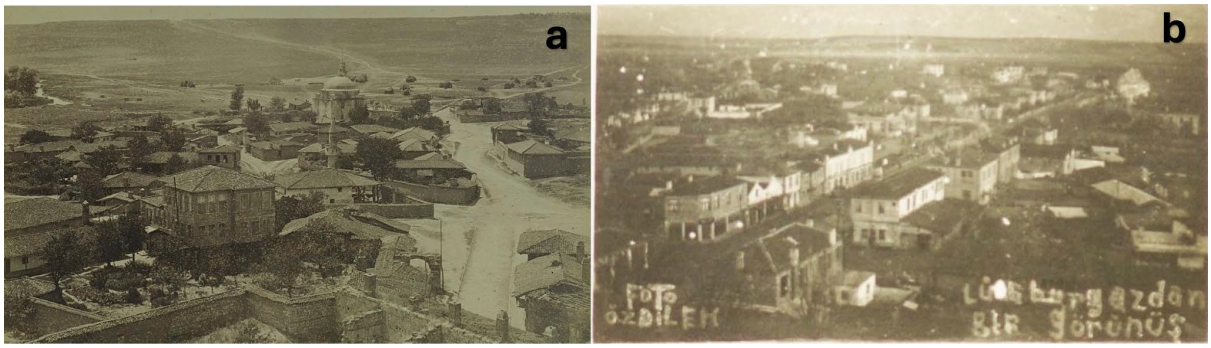

Figure 1. a: General view of Lüleburgaz during Ottoman era (İstanbul Üniversitesi Nadir Eserler Kütüphanesi n.d.); b: General view of Lüleburgaz during Early Republican era (Uç 1942).

4.2. Inventory Results

The city's morphology reveals that the settlement bears traces of both the traditional Ottoman urban fabric and the Republican-era urban fabric shaped by migration. It is observed that Ottoman civil architecture, concentrated in the neighborhoods of Dere and Yılmaz, which were the first settlement areas in the city center, has largely disappeared, but the civil architectural heritage reflecting the city's Republican era identity continues to exist.

Fieldwork was conducted in parallel with the city's development from the center to the periphery. There are three registered examples of traditional civil architecture in the neighborhoods of Dere and Yılmaz, which were the first neighborhoods of the settlement. A total of 322 examples of civil architecture built in the 20th century have been identified throughout the city, including the neighborhoods of Barış, Cumhuriyet, Dere, Gençlik, Gündoğu, Güneş, Hürriyet, İnönü, Kocasinan, Kurtuluş, Özerler, Siteler, Yeni, Yıldırım, and Yıldız.

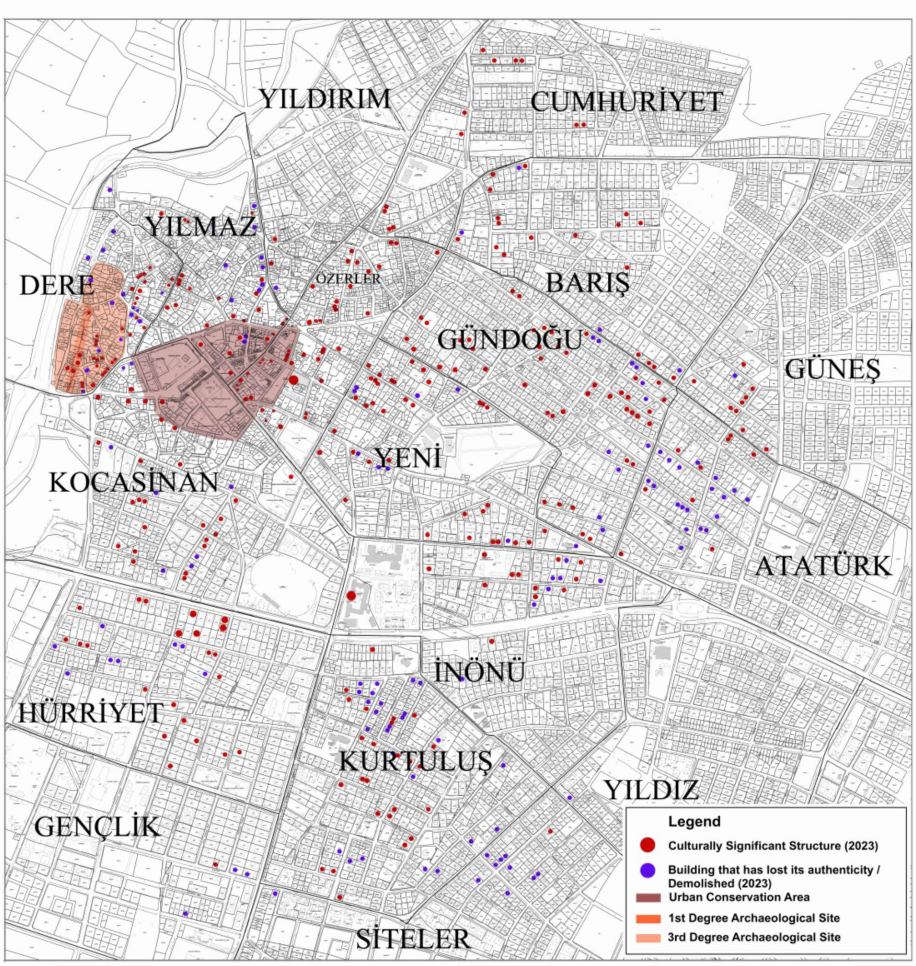

Figure 2. Lüleburgaz Civil Architecture Heritage Inventory.

Data obtained from publications dating back to 1942, 1963, 1992, and 2010 on the urban morphology of Lüleburgaz were compared with on-site observations to determine the time period to which the civil architecture structures of the Republican era belong and to define their architectural characteristics.

In the early years of the Republic, while the planned urban development movement in the devastated city began in the 1940s, migration that began in the 1920s played a significant role in shaping the settlement fabric. Detailed information on where migrants were settled in the city can be found in Arslan's (2010) publications. Between 1930 and 1935, the state built housing for immigrants from Bulgaria in the Gündoğu neighborhood. Established in 1935 and referred to as the “immigrant neighborhood,” it later took the name Gündoğu Neighborhood (Timor 1992, 236; Arslan 2010, 163).

During the early Republican period, it is known that the migrant houses built in the 1930s were constructed on state land in a location close to the center; they had a regular layout and were single-story structures consisting of two rooms and a living room. Stables were located right next to the adobe houses (Uç 1942, 11, Göral 1963, 26). (Figure 3. a & b.) We can date them to the 1930s and 40s. It is understood that most of the houses, which Göral (1960) described as ‘native houses’, were located within a large courtyard, where the toilet, barn, hayloft, and well were located. These structures are single-story and built with adobe (Göral 1963, 26, Arslan 2010, 185). (Figure 3. c & d.)

Figure 3. a: Lüleburgaz Immigrant House 1935 (Arslan 2010, 186); b: Block 79 Parcel 3 Immigrant House (September 2021). c: Gündoğu Neighborhood Block 67 Parcel 25 Adobe House (December, 2020); d: Kurtuluş Neighborhood Block 100 Parcel 16 Brick House (September 2021).

By the 1950s, we see single-story and two-story buildings in the city center and its surroundings, along with new settlements in Lüleburgaz due to migration and natural disasters. In Dere Neighborhood, there is a four-unit building block constructed in one go, with an inscription dated 1952 (Figure 4). The building block, which has a simple facade, reflects the residential architectural features of the period with its wide modern windows surrounded by white window frames, horizontal floor lines, and wide reinforced concrete eaves, and with each residence having a private entrance from the street.

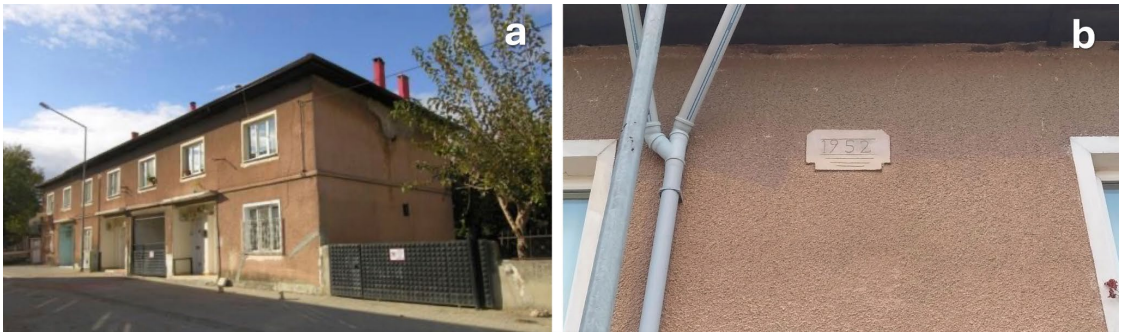

Figure 4. a & b: Dere Neighborhood Block 264 Parcel 11-10-9-7 (2020).

In the 1950s, the state again commissioned the construction of single-story twin houses within a garden in Kurtuluş Mahallesi. These houses feature a floor plan consisting of two rooms, a hallway, and a kitchen. These structures were built using a masonry system with brick material. (Arslan 2010, 186).

Similar examples of housing dated to the 1950s have been identified in the area. It is understood that these houses also have a simple floor plan consisting of a living room and two rooms on either side, like other single-story houses with a central entrance. These types of structures located within the garden are accessed from the front yard. Examples of structures with the same facade arrangement and plan scheme that are accessed from the road are also prevalent. (Figure 5. a & b)

Some of the single-story houses identified are structures with garden entrances, as described above. The presence of water wells, mentioned in the sources, has also been identified in some of these structures. Additionally, there are single-story houses located on the street with street entrances. (Figure 5. c & d)

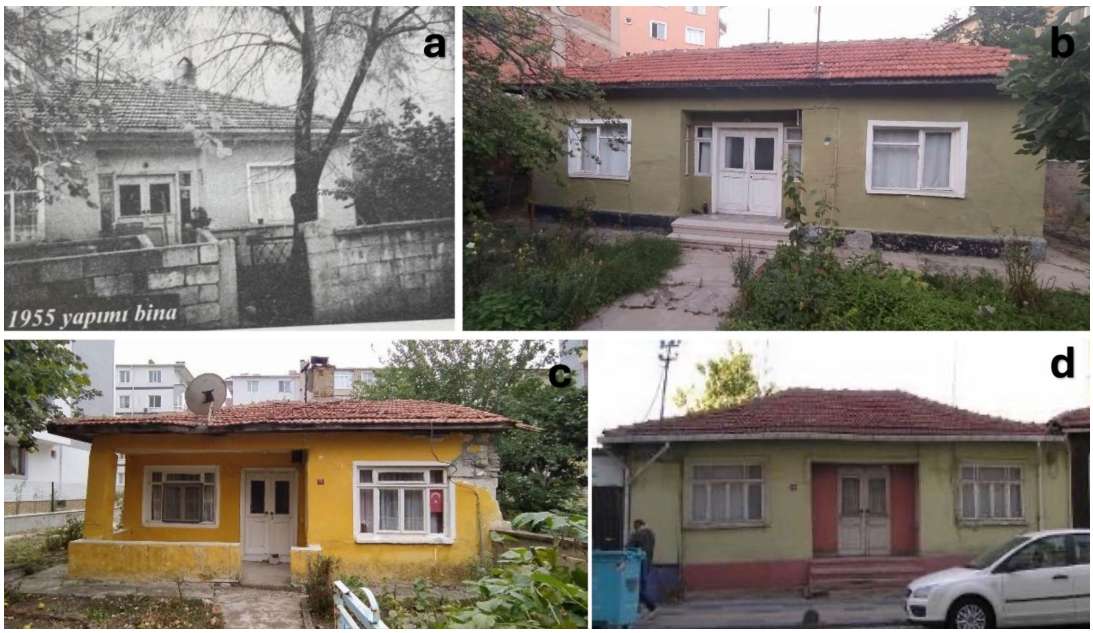

Figure 5. a: (Arslan 2010); b: Kocasinan Neighborhood Block 667 Parcel 14 (2020); c: Block 103 Parcel 10 (2021); d: Dere Neighborhood Block 262 Parcel 13-11 (2020).

Two-story residential buildings have been observed in the neighborhoods of Dere, Gündoğu, Hürriyet, İnönü, Koca Sinan, Kurtuluş, Özerler, Yeni, and Yılmaz. It is believed that these structures were built using a mixed system consisting of masonry brick exterior walls and reinforced concrete floors and beams.

Some 2-3-story residential buildings, thought to have been built in the 1950s, with commercial areas on the ground floor, were observed to have a design language reflecting the modern architectural tendencies of the period. In these buildings, which have two symmetrical apartments on a single floor, the cantilevers on the central axis create a facade movement, while the corner windows, side balconies, and wide reinforced concrete eaves reinforce the horizontal effect. (Figure 6. a)

Further from the city center, two-story houses built in 1955–56 can be found, typically situated within gardens and characterized by separate entrances and large balconies on each façade level. (Figure 6. b).

Figure 6. a: Özerler Neighborhood Block 202 Parcel 6-7; b: İnönü Neighborhood Block 336 Parcel 22 (2020).

Some of the 2-3 story buildings constructed within the garden have separate entrances for each apartment, with staircases leading to the upper floors from the side of the building. These unique details were observed in many buildings during our fieldwork (Figure 7. a & b). In the example of a two-story detached house

within the garden at Kocasinan Neighborhood, block 190, parcel 15, and at Özerler Neighborhood, block 229, parcel 18, side balconies designed as a continuation of the front cantilevers were designed in a concave form, thus ensuring the aesthetic integrity of the cantilevers with the side surfaces (Figure 7. b). A similar detail can be seen in the three-story house at 89 block 29 parcel in Kurtuluş Neighborhood, where movement is achieved by creating a recess instead of a cantilever on the facade (Figure 7. c).

Figure 7. a: Hürriyet Neighborhood Block 167 Parcel 7; b: Kocasinan Neighborhood Block 190 Parcel 15; c: Kurtuluş Neighborhood Block 89 Parcel 29 (2020).

Several examples of curved forms used in architectural design can be found in the area. Among these, the building at plot 12, block 62, Yeni neighborhood, which largely retained its originality in 2021, has now been unfortunately demolished (Figure 8).

Figure 8. Yeni Neighborhood Block 62 Parcel 12 (2021).

Another planned settlement in Lüleburgaz is the "Seylap Houses," which were allocated by the state to flood victims after the great flood disaster of 1956. Sources indicate that these houses were single-story, consisting of two rooms, a kitchen, and a hallway, and were built according to the same plan as migrant houses, with brick masonry and wooden roofs, which were covered with clay tiles(Güral 1963, 26; Timor 1992, 135; Arslan 2010, 186). During fieldwork, six of these houses were identified in the Hürriyet neighborhood. Some of these houses have been abandoned, while others continue to be used with regular repairs (Figure 9. a & b).

Figure 9. a: Gündoğu Neighborhood Block 156 Parcel 1 (Aralık 2020); b: Seylap Houses (Arslan 2010, 187).

In Lüleburgaz, where new neighborhoods emerged due to heavy immigration, the 2-3 story houses that began to be built in the 1950s were replaced by 4-5 story modern reinforced concrete buildings after the 1970s, due to developments in the 1960s. This rapid transformation was particularly evident in the city center. Furthermore, with the development of commercial activities, buildings dating back to the early 20th century in the center were demolished and replaced with multi-story commercial buildings and shopping arcades (Timor 1992, 241). The Condominium Law, which came into force in 1965, facilitated the formation of multi-functional buildings. In central neighborhoods such as Kocasinan, Yılmaz, and Yeni Mahalle, commercial and residential buildings appeared in a multi-story and contiguous arrangement within the organic fabric, in accordance with the plan that defined the parcel boundaries.

From the late 1960s to the late 1970s, it is possible to observe semi-transparent walls that allow light into the entrance and stairwell on the facade, large window openings, closed facades without cantilevers, and balconies in two-story and multi-story residential buildings and apartment buildings (Figure 10. a/b/c). Simple or horizontal lines are also predominantly used on garden wall fences and balcony railing..

Figure 10. a: Building with 1960 inscription; b & c: 1970 Multi-storey buildings seen after the 1970s and 1980s (2020).

The villa-type residences belonging to high-income families, which are contemporary with the structures described above, are mostly located on both sides of the street following Istanbul Street-Orduevi (Timor 1992, 258). Of these houses, the one at Hürriyet Neighborhood, Block 167, Parcel 6 is in its original condition, while the one at Yeni Neighborhood, Block 322, Parcel 36 has undergone a change of function and lost its original facade as it is now used as a restaurant. Both structures feature windows, eaves, balconies, and ironwork on the railings that reflect the architectural design concepts of their era (Figure 13 a/b).

Figure 10. a: Hürriyet Neighborhood Block 167 Parcel 6 (2020); b: Photograph of the building on Block 322 Parcel 36 in Yeni Neighborhood from 2014 (Google Maps 2014). The building has undergone changes today.

The buildings identified in the city center, dating from roughly the 1950s to the late 1960s, were built using load-bearing masonry brick walls and reinforced concrete floor slabs. A common feature of these houses is that they were built on a foundation approximately one meter high. In the houses defined as villa-type, the balconies were designed as cantilevers to create an expressive architectural language.

Since the 1980s, as new residential areas were established, neighborhood boundaries expanded, and at the same time, significant changes began in building character and density. Even in low-density residential areas such as Yeni Mahalle, which was one of the city's mid-20th century development zones, the urban landscape is changing today. The single-story, modern buildings in these areas are beginning to succumb to time in line with current zoning plans. They are rapidly being replaced by multi-story apartment blocks.

5. DISCUSSION

Like many Anatolian cities, Lüleburgaz entered a period of reconstruction after the War of Independence with the establishment of the Republic. During the transition from traditional to modern, the local reflection of modernity began to be evident in the city's fabric and architecture. The inventory study revealed that the city's historical development can still be traced through spatial data.

The findings of the inventory reveal significant insights into the challenges affecting the 20th Century architectural heritage in Lüleburgaz. The documentation process not only enabled the identification of Republican era architecture but also revealed the underlying mechanisms contributing to their vulnerability.

Although Lüleburgaz's traditional urban fabric is evident in the organic street layout within a limited area, it is clear that the city has largely lost its civil architectural heritage. However, it is evident that the city still possesses a significant number of examples of modern civil architecture from the 20th century that reflect the lifestyle, architectural design, and construction techniques of that period. Although many original structures have been lost, it is still possible to say that today's parcel sizes retain traces of the mid-century urban fabric.

During the fieldwork conducted in November 2020, July, and September 2021, an inventory was prepared of 322 structures still standing at the time of the on-site surveys. Simultaneously, a review of historical Google Maps and the Lüleburgaz City Guide revealed that 117 structures had been demolished, destroyed, or had completely lost their original character. As a result of the study, an inventory of a total of 439 structures was created. This numerical data reveals the potential of Lüleburgaz's civil architectural heritage, while also highlighting that this heritage is at risk of disappearing due to intensive development activities. The building at New Neighborhood Block 62 Parcel 12 in Lüleburgaz can be cited as an example of the rate at which 20th-century heritage is disappearing (Figure 8). The building was identified during 2021 on-site surveys and demolished in 2023 for urban renewal.

This urban transformation in the city has been shaped by changes in zoning regulations. The municipality's 1970 development plan permitted building heights of only two to three stories in central areas, such as Dere, Kocasinan, and Yılmaz neighborhoods, and allowed similarly modest heights in planned modern settlements, including Seylap Houses. With this approach, garden layouts and urban patterns were preserved. However, the 1987 development plan adopted an adverse approach, diverging significantly from the earlier plans. By allowing high-rise development across the entire city, the plan enabled the construction of five-story buildings in the central areas, which are situated in the urban conservation zone today. This created a dense urban fabric with high-rise attached structures in the historic city center. Similarly, in the planned modern settlements, five-story buildings were permitted, either with detached or semi-detached (twin) layout. This shift in urban development triggered irreversible transformations in Lüleburgaz's unique 20th-century architectural and urban fabric.

Today, current zoning regulations continue to allow similar urban development conditions, which are adopted from the 1987 development plan. With the increase in resident population today, urban development areas have also expanded towards the periphery. Influenced by Türkiye's construction-based economic policies adopted in the 21st century, the economic value of low-density mid-century modern residential areas located in city centers has increased, attracting the interest of construction companies. As a result, most of the twentieth-century heritage in Lüleburgaz remains under urban development pressure. It can be stated that the vulnerability of this heritage is not merely the consequence of neglect or physical decay but an ongoing challenge rooted in planning policies and developmental priorities.

During their inventory studies in Lüleburgaz, researchers had the opportunity to interact with users and property owners. The interviews revealed that the original property owners living in some residences had embraced their homes and attributed value to them. It was found that the elderly, in particular, did not want to leave their homes due to the strong bond they had formed with the place, but were under pressure from the rapidly changing environment brought about by the current development plans. This underscores the need for policy interventions that prioritize heritage preservation.

However, it should not be forgotten that the main risk lies in the fact that modern structures, especially civil architecture structures, are not yet widely regarded as "heritage." For this reason, it is believed that the inventory study will be a foundation to raise awareness about the city's 20th-century civil architecture heritage.

This study, conducted in accordance with the established heritage criteria (see 3.2. Criteria and Process of Identification), demonstrates that the continued presence of these values in modern structures makes their preservation critical for sustaining urban memory and identity. In this context, the inventory of civil architectural heritage in Lüleburgaz was evaluated, and a proposed registration list was created featuring structures that stand out in terms of the values they embody. Of the total 322 structures identified as existing as of September 2021, 57 were proposed for registration. Unfortunately, these structures have not yet been officially registered as cultural heritage. Unfortunately, these structures have not yet been officially registered as cultural heritage. Despite this, the inventory study was observed to play a positive role in raising awareness among municipal officials. Even in the absence of formal registration, the documented evidence becomes a foundation for advocating protective interventions.

6. CONCLUSION

Lüleburgaz, like many Anatolian cities, has a multi-layered structure. The built environment, shaped by historical, social, economic, and political events, primarily reflects urban and architectural forms dating from the second half of the 20th century. From the 1940s onward, the city expanded toward the periphery with its growing population, resulting in planned residential areas and modern/contemporary designs. Following the enactment of the Law on Condominium Ownership in 1965, multi-story buildings began to be built in the city. While the city's residential fabric consisted primarily of single- or two-story structures

set in gardens, multi-story commercial and residential structures emerged in the central neighborhoods, where traditional architecture predominated. The zoning plan, enacted in 1987, paved the way for multi-story development in the city, and both the traditional residential fabric in the center and modern residential areas took on a multi-story appearance. This transformation continues today, and low-density residential areas like the Yeni neighborhood, one of the city's mid-20th-century development areas, are undergoing transformation. The single-story, modern buildings in these areas have begun to wither away in line with current zoning plans. They are rapidly being replaced by multi-story residential blocks.

The inventory study conducted has enabled the collection of concrete data regarding the city's development and contributed to the recognition of Lüleburgaz's Republican-era heritage. The study revealed Lüleburgaz's potential for modern architectural heritage, but development activities under the current zoning plan have shown that this heritage is at risk. Preserving the buildings and spaces that hold a place in the city's memory and passing them on to future generations will contribute to strengthening the identity and sense of belonging of the local community. The recommendation to register 57 of the 322 identified structures is an important effort for their preservation, but it is not sufficient. It is essential to raise awareness among the local population about this heritage, particularly through educational workshops for children and young people. In this way, the inhabitants of this city, with its rich historical identity, can be made aware of the need to preserve buildings representing the Republic and modern architecture, which are at risk of disappearing.

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THE ROLE OF PUBLIC SQUARES IN SHAPING AND REFLECTING LOCAL IDENTITY IN TRIPOLI–LIBYA

ADELL SALEM AWAJ

ABSTRACT

Public squares function as active urban spaces which unite political elements with historical remembrance and daily community activities. The Libyan city of Tripoli features Martyrs', Algeria, and Ghazala Squares which have operated as a colonial control centre while also hosting national festivities and serving as a revolutionary battleground. This paper investigates how Tripoli's public areas both influence and display local identity through their historical development and their renaming practices and common usage patterns. Public squares throughout history have functioned as essential areas for social contact and cultural manifestation and communal memory preservation in urban settings. The research investigates how public squares influence local identity through their diverse activities which create community perceptions and attachment patterns. Research on urban open spaces has received substantial attention but the evolving public space engagement and usage patterns in historic urban areas remain poorly studied. The research combines urban historical analysis with cultural geographic methods and direct observations to reveal the multiple layers of meaning that exist in these spaces which have evolved from colonial Piazza Italia to Gaddafi's Green Square and now function as Martyrs' Square for commemoration and civic activities. The research used a qualitative multi-method design which included ethnographic observations and semi-structured interviews with local residents and cultural event analysis in the square. The research shows that public squares create a sense of belonging through three main mechanisms which include (1) regular social interactions between different groups of people that establish common social norms, (2) symbolic events like festivals, demonstrations, and rituals that strengthen collective identity, and (3) the square's physical layout which promotes universal access and participation. The research reveals social conflicts because different groups fight for control of the square which reveals existing social inequalities and representation disputes. The research concludes that public squares are not neutral backdrops but active agents in the construction of local identity. They provide both stability and contestation, reflecting the community's values, diversity, and conflicts. Strengthening public squares as inclusive spaces can therefore enhance social cohesion and local belonging. Ultimately, the study underscores the importance of public squares in linking place, identity, and community in contemporary urban life.

KEYWORDS: Public squares, Tripoli, Libya, local identity, memory, urban space, Martyrs' Square

1. INTRODUCTION

Public squares have historically functioned as the heart of urban life, acting as arenas for civic engagement, cultural expression, and social cohesion. Across different civilizations, from the Greek agora to the Roman forum and the Arab saha, public squares have reflected the values, aspirations, and identities of their societies. In Libya, and particularly in Tripoli, public squares hold special significance as they encapsulate the city's layered history—from its ancient origins to Ottoman, Italian colonial, and post-independence transformations. However, rapid urbanization, political change, and globalization have reshaped the physical and social fabric of these spaces, often diluting their local identity and social function. This study aims to explore how Tripoli's public squares both shape and reflect local identity. Specifically, it seeks to:

Examine how the spatial and architectural characteristics of selected squares express local culture and history.

Investigate how social activities and public interactions reinforce or challenge the sense of place and belonging.

Identify strategies to strengthen the cultural and symbolic role of these squares in contemporary Tripoli.

Urban design theories and research studies demonstrate that public squares function as fundamental urban elements which create the essence of city composition through their role in expressing local urban identity. Public squares function as fundamental structural elements which establish both the spatial organisation and visual character of urban areas. Krier (1988, p. 43) explains that urban square design and local identity development exist as interconnected elements because their urban design and surrounding environment create harmony through proportional three-dimensional arrangements that highlight their urban significance. The physical design of public squares determines how the city presents itself to the public through its spatial and visual characteristics.

Lynch (1965, p. 133) demonstrated that urban components including building forms and spatial dimensions and functional areas and human scale elements create visual and architectural value which defines city images and local identities. The urban environment achieves its legibility and recognisable character through five fundamental elements, which Lynch (1965) identified as paths and edges, districts and nodes, and landmarks. The public square functions as both a meeting point and a symbolic landmark which shapes how people understand their local identity. The social aspects, economic factors, political elements, and symbolic value of public squares determine their operational purpose and how they express local architectural identity. According to Adell Awaj (2024; 2025) architectural character develops through time because it reflects the urban environment of its era which results from religious and social and cultural and political interactions. The architectural and visual identities of Tripoli's public squares developed through historical interactions between various factors which integrated local values into their design elements.

The values which define local identity through architecture, visual elements, religious practices, cultural traditions, and political beliefs have experienced major deterioration over the last few decades. The urban square system in Tripoli's city centre has broken apart because of major social and political changes that have occurred in the area. The modifications made to the city's built environment and its landmark structures have created visual and morphological disruptions which have reduced these spaces' ability to represent local identity. The main squares of central Tripoli underwent changes because of multiple social and political shifts which resulted in unclear urban forms and progressive deterioration of local identity. The main squares of Tripoli need fresh analysis to determine their visual and spatial connection with central Tripoli's urban structure while restoring their identity and coherence. The research investigates Tripoli's three main squares (Martyrs' Square, Aljazair Square, and Ghazala Square) to create urban and architectural plans which will revive their status as vital landmarks of local urban identity within Tripoli's historical and present-day city centre.

Public squares in urban areas function as active spaces which display the combined historical records, cultural traditions, and social and political stories of their cities. The Libyan city of Tripoli uses public

squares to express its developing local identity, which resulted from multiple historical, political, and cultural changes. The urban development of each square section shows the city's social and architectural growth while uniting physical design with historical preservation and community activities. The urban core of Tripoli presents an excellent opportunity to study how urban design elements create local identity. The city's development through time has created multiple cultural influences which transformed its architectural design and public area meanings. The three public spaces of Martyrs' Square (formerly Green Square), Aljazair Square, and Ghazala Square function as essential points that define Tripoli's urban structure.

Martyrs' Square in Tripoli serves as the central public area which represents national identity while undergoing changes from Italian colonial "Piazza Italia" to its present state. The evolution of this space through time demonstrates how Libya's political story has evolved while the nation worked to achieve self-governance. The mid-twentieth-century architectural changes in Aljazair Square created a connection between the historic old city district and the new development areas that emerged after independence. The small size of Ghazala Square does not diminish its significance because it shows how local people maintain their social bonds through daily activities while their memories of the area endure despite urban development. The research investigates how these three main public squares in Tripoli create and display local identity through their physical design, historical development, and symbolic value. The research uses spatial analysis and morphological methods to understand how these urban areas relate to each other and how their physical design, historical development, and symbolic value create Tripoli's shared urban identity. The research investigates how urban design affects identity through its analysis of Tripoli's public squares within Mediterranean and North African urban planning contexts. The analysis demonstrates that public areas maintain their cultural heritage through physical design while actively shaping local identity development. The research investigates how Tripoli's main public squares create a framework that determines both the city's structure and its physical design. The research examines Tripoli's historical development, geographical setting, and urban design patterns from the study period to discover and explain the unique characteristics of these urban empty spaces. The research investigates how public space arrangements create spatial patterns which form local identity to enhance knowledge about central Tripoli's urban appearance and identity.

2. Local Identity in Urban Design

2.1 The Concept of Place and Local Identity in Urban Design

The academic community, along with practitioners, now recognises place as a fundamental element which enables cities to express their local character (Relph, 1976; Tuan, 1976; Rapoport, 1990; Cresswell, 1996; Mohamed, 2013; Awaj, 2024, 2025). The initial theoretical work about place focused on its physical characteristics as an objective geographical location. Conzen (1960) established place as a physical urban structure, which includes street arrangements, building designs, and plot divisions that create a city's spatial character. Lynch (1960) developed a place concept by identifying five essential urban components which form the basis of urban perception and strengthen local identity. The understanding of place shifted toward experiential and phenomenological studies during the 1970s because researchers started to focus on human-environment interactions. Tuan (1976, 1991) and Relph (1976) explained that places emerge through human experiences which create emotional connections and memories that transform spaces into meaningful areas through social activities and regular human contact. The social and symbolic construction of local identity emerges from how inhabitants experience and tell stories about their environment (Carmona et al., 2003; Seamon & Sowers, 2008; Cresswell, 2015).

The three elements of form, activity, and meaning work together to create places with local identity according to modern urban theory (Montgomery, 1998; Gehl, 2010). The physical structures of environments interact with social activities to establish a reciprocal relationship between them. People

create emotional, cultural, and symbolic value in urban areas, which transforms physical spaces into meaningful places that represent shared community identity (Gieryn, 2000; Ujang & Zakariya, 2015b). The evaluation of local identity requires researchers to study both physical urban structures and the emotional and cultural values which residents assign to their environment. The theoretical framework enables researchers to study how public squares in Tripoli, Libya, express local identity through their physical design, historical significance, and social activities. The physical design of these spaces combines with historical memories and social interactions to create a shared sense of community and an exclusive urban identity that showcases the city's cultural development through time.

2.1.1 The Social Dimension of Urban Squares and Local Identity

Urban design requires knowledge about how society interacts with its environment, according to Carmona et al. (2010). Research on urban squares has evolved through fifty years to show their dual purpose as transportation routes and social hubs for community interaction (Jacobs, 1961; Appleyard, 1981; Gehl, 1987; Jacobs, 1993; Montgomery, 2007; Mehta, 2013; Mohamed, 2013; Awaj, 2024, 2025). The local character of a square develops through regular social activities and cultural events which people perform in the space. According to Miles (2000) cities function as cultural creations which enable people to create and experience cultural expressions. Urban squares function as essential social areas, which enable people to perform activities that reflect their cultural heritage, thus strengthening the local character of their cities. The social activities that take place in squares through funerals and weddings, musical events, and public festivities create specific social values that strengthen the cultural essence of the area. The specific traditions, historical background, and cultural standards of local residents determine the social and cultural dynamics of a square, resulting in a distinctive character for each public space.

2.1.2 The Visual Dimension of the Urban Square

The visual dimension of urban squares create their fundamental identity through the way users experience spatial arrangements, architectural designs, material choices, and sensory perceptions. The aesthetic value of urban spaces emerges from the way volumetric arrangements and visible elements and their relational connections work together, according to Carmona et al. (2010:169). The visual elements of a square determine how people experience and remember urban identity. Cullen (1961) explains that cities should be experienced through movement because observers should view urban form while in motion instead of standing still. The square's identity emerges through physical exploration, visual discovery, and personal interactions with the space. The historic street corridors of Tripoli lead to open civic squares through a gradual transition which creates a multi-layered visual experience that showcases the city's cultural heritage and continuous heritage.

Rapoport (1987) explains how pedestrians notice artefacts and small details which high-speed users cannot perceive. The walkable areas of Martyrs' Square and traditional districts maintain their authentic local identity through their human-scale architectural elements, façade details, and paving textures, which create an authentic local experience. Nasar (1998) demonstrates that complex visual elements create better engagement because architectural details with multiple layers and textures produce deeper urban experiences. The city of Tripoli displays a unique visual narrative through its combination of Islamic architectural elements with colonial buildings and post-independence additions which show both historical development and cultural preservation. The aesthetic quality of public spaces results from the combination of material textures with colour schemes, architectural facade designs, and social activities, according to Carmona et al. (2010). The concepts of positive and negative space from Alexander et al. (1977) and the ideas of enclosure and closure from Cullen (1961) demonstrate how spatial boundaries create feelings of identity. The open design of Martyrs' Square in Tripoli's city center faces toward civic activities but Algeria Square's enclosed shape creates a space that reflects its historical background. The concept of bounded

space, which Awaj (2025) describes, exists in areas where urban design creates unified visual areas through enclosed spaces, which can still be seen in Ghazala Square. The combination of public experience and architectural meaning depends on building façades according to Buchanan (1988a) and Jacobs (2010), who demonstrate that well-proportioned and detailed façades create both aesthetic value and local identity. The key squares of Tripoli receive their symbolic value through the visual elements of their surrounding façades which include the Red Castle walls and the former Cathedral and historic administrative buildings.

2.1.3 The perceptual dimension of the square

The fundamental aspect of modern urban design depends on how people perceive their environment through their understanding of environmental perception and their experiences of place (Carmona et al., 2010). The work of Lynch (1960), Relph (1976), Mohamed (2013), and Awaj (2025) demonstrates how human perceptions transform their environment while being influenced by their surroundings through local identity. Lynch (1960) studied place image by studying how residents actively view their environment to understand how physical elements and spatial arrangements create urban identity. The theoretical framework of place-identity received additional development through the work of Relph (1976), Mohamed (2013), and Awaj (2025), who demonstrated its ability to create feelings of connection and stability. Relph (1976) established that people develop emotional bonds with their living spaces through place-identity which creates a psychological and collective identity. Mohamed (2013) demonstrated that place-identity development occurs through reflective discussions about places which help people understand their unique characteristics. Awaj (2025) defined place-identity as a combination of personal memories, emotional responses, and interpretive thoughts which connect to particular locations and their surrounding environmental elements. The research confirms that local identity stands as the core factor which determines how people experience their urban environment.

Place image exists as a direct connection to place-identity because it shows how people view spaces while reflecting the shared characteristics of those areas (Carmona et al., 2010). Lynch (1960) identified five physical elements which form the basis of place image through their contribution to the expression of local identity in the urban environment. Rapoport (1977) demonstrated that place images exist through multiple sensory experiences, which include visual appearance, social and cultural elements, human activities, and community participation to strengthen local identity. Urban planners, together with policymakers and local stakeholders, now focus on building positive city images because this approach helps them develop stronger urban identity and competitive advantages (Mohamed, 2013). The initiatives create economic growth and tourism expansion while measuring resident contentment through their pride in their community which exists within the urban structure (Awaj, 2025). The identity of urban public areas, including squares and streets, emerges through design planning and management, and community usage and appropriation of these spaces (Mehta, 2013). The research by Carmona et al. (2010) supports this finding because environmental perception differences between people depend on their demographic characteristics, life experiences, and social background.

2.1.3.a Sense of place

Norberg-Schulz (1980) defines place as a physical entity which unites spatial elements with material and experiential aspects. According to his phenomenological approach, a place exists as a physical space which combines form with materiality and texture and colour to create its environmental character that defines its local identity. The atmosphere of a place functions as its fundamental essence because it exists as an unbroken qualitative whole which requires complete experience to understand its existence. The local identity of a place develops through the combination of physical elements which people can see with the non-physical aspects that people experience through their emotions and personal experiences. According to Canter (1977), a place achieves its identity through the combination of physical elements, human

activities, and mental interpretations. The physical attributes of a space include its spatial organisation, architectural features, and material resources, which work together to establish its local character. Human activities at a place include the way people behave, socialise, and perform their daily tasks, while the conceptual dimension represents how people view and understand the space. The complete understanding of place emerges when these three elements unite to show how physical spaces and social constructs create local identity.

Relph (1976) develops the concept of "spirit of place" or genius loci to show that affective and symbolic elements form fundamental parts of local identity. The spirit of a place contains emotional connections, shared historical values, and cultural symbols which survive through changes to its physical structure and operational purposes. A place maintains its local identity through its ability to preserve communal experiences and historical narratives which create emotional connections with its community members. Montgomery (1998) shows through his research that urban design strategies, which are purposefully implemented, can either support or improve the local character of urban areas. Design interventions which focus on physical elements and experiential aspects create stronger character and atmosphere and social value in places which maintain their local identity as recognisable and meaningful to their community.

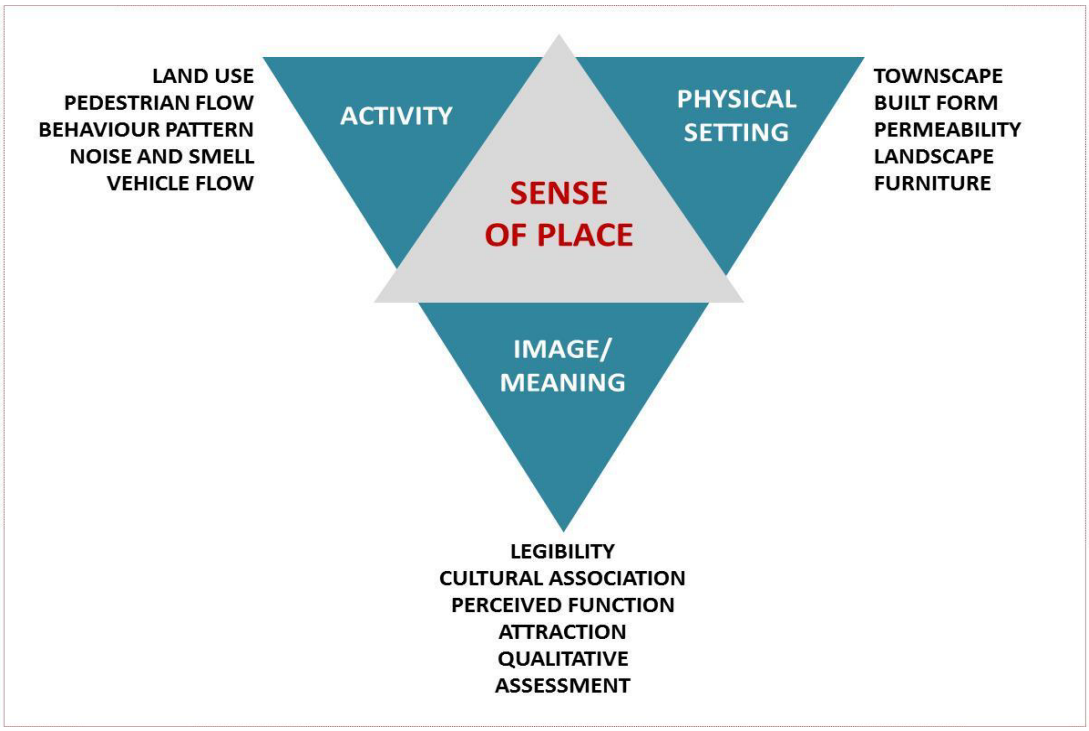

Figure 1.1 Sense of place diagram, adapted from Montgomery (1998)

2.1.4 The Functional Dimension of Squares and Local Identity

Research studies from multiple years have demonstrated that urban squares function as essential social, economic, and cultural centres which unite people (Jacobs, 1961; Appleyard, 1981; Gehl, 1987; Mehta, 2013). According to Jacobs (1961), urban squares enable people to meet socially while conducting business transactions through both casual and organised interactions, which develop the character of urban spaces. Gehl (1987) explained in Life Between Buildings that public spaces should prioritise optional social activities instead of serving as movement routes because this approach strengthens local identity through human social interactions. Mehta (2013) studied squares as dynamic community centres which maintain their essential role in developing neighbourhood character. The social nature of squares depends on pedestrian movement because it establishes a positive feedback system between human circulation and

economic activities and social and cultural exchanges (Carmona et al., 2010). The movement of pedestrians through squares depends on both the design of square networks and the strategic placement of essential buildings, including shops, offices, and public facilities (Awaj, 2024). The urban grid's high connectivity levels produce increased pedestrian traffic which enhances local identity through social contact and environmental engagement (Hillier et al., 1993).

The research of Gehl (1987) shows that poorly designed public squares restrict human activities to essential needs which results in reduced social interaction and diminished local identity value. The design quality of public spaces determines how long people stay and what activities they perform which strengthens the cultural and social identity that exists in urban environments. Urban design exists to create places which function as active environments that develop through human activities and social events (Buchanan, 1988b). The development of local identity in urban squares depends on the combination of different uses and experiences which Jacobs (1961) identifies as essential for understanding how cities create and sustain their identity. The formation and maintenance of local identity in urban squares depends on two types of activities which occur in public spaces: passive and active engagement. People-watching serves as an observational activity which allows viewers to observe others in the square while creating social awareness through their presence and actions (Whyte, 1980). The design of spaces which promote visual interaction through pavement cafés, fountains, public art installations, and viewing areas enables people to experience the environment through contemplation, which strengthens the local identity based on social and cultural square activities (Montgomery, 2007; Carmona et al., 2010). People need to actively participate with others through direct social interactions when they want to connect with friends or family or meet new people (Carr, 1992). The design of urban squares should offer adaptable spaces which allow users to choose between socialising and personal time. The strategic placement of amenities, including benches, sculptures, fountains, and public art, creates social interaction areas which develop personal relationships that strengthen the square's identity and local character (Carmona et al., 2010). According to Whyte (1980) people who interact with each other will start conversations with strangers which builds community spirit and strengthens the public space identity. The square functions as a vital connection point for the social and cultural structure of the city because people engage with it through both passive and active activities.

2.2 Historical Evolution of Public Squares and Local Identity in Tripoli

The historical development of Tripoli's public open spaces requires analysis of its public squares from their initial development through subsequent urban changes. The city centre of Tripoli shows evidence from various historical periods, which have created its unique architectural style and spatial design that defines its local character. The city of Tripoli underwent complete social, cultural, and spatial changes after Muslims established their presence in 643 AD (23 AH), which brought new language usage, religious customs, privacy standards, and daily routines (Lakhder & Dugeny, 2010; Abdulla, 2023; Awaj, 2025). The Islamic period established public open spaces as vital elements of urban life because religious and cultural standards determined how these areas developed in Islamic cities.

Figure 1.2: Plan of Tripoli in 1559 (Alakhal, 2017, as cited in Awaj, 2025)

The Islamic-era public areas of Tripoli contained essential community features, which included mosques, souks, and primary thoroughfares. The designers of these spaces followed Islamic principles, which emphasised privacy protection and neighbourly rights according to Sharia law. The spatial organisation of public areas followed these principles to maintain gender segregation and social duties between residents, which resulted in the integration of local identity into urban space planning (Lakhder & Dugeny, 2010; El-Hasumi, 2018; Akbar, 1998). The spaces served dual purposes by enabling social activities and commercial activities, and they displayed the cultural heritage and local characteristics of Tripoli. The development of historical cartography shows how the city design evolved through time. The 1746 map shows how the urban centre merged with the harbour to create a unified spatial design, which strengthened the local identity of the city (Awaj, 2025). The design and usage of public squares through religious, cultural, and social practices have maintained their central role in shaping Tripoli's urban character and local identity since the city's founding days, thus making these spaces essential for studying both historical urban growth and present-day urban identity.

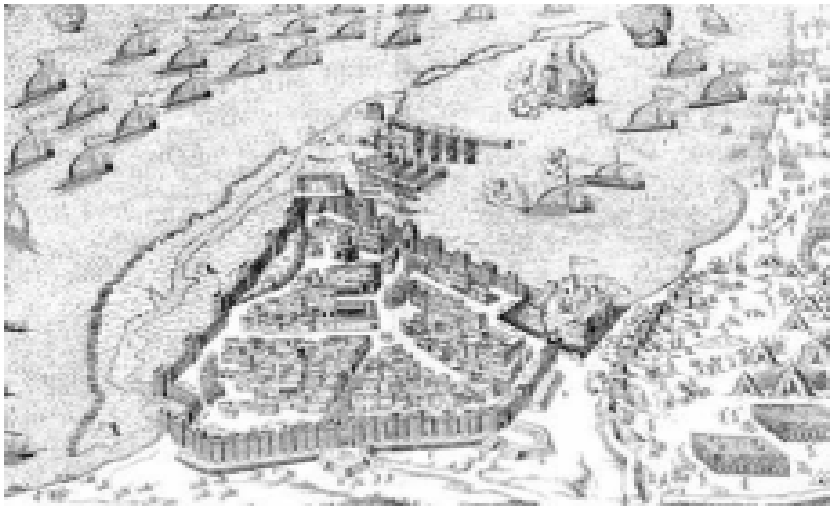

Figure 1.3 The figure shows the Plan of Tripoli in 1559 (Alakhal, 2017, as cited in Abdulla, 2023).

2.2.1 The Ottoman Influence and the Transformation of Local Urban Identity in Tripoli

The Ottoman Empire established its extensive control over North African cities, including Tripoli, during the sixteenth century, which brought substantial changes to their urban design and architectural features. The Ottoman takeover of Tripoli brought an end to Spanish rule while establishing a new political system which transformed the city's urban character. El-Hasumi (2018) explains that the city underwent a slow transformation of its urban design because Islamic planning rules, which controlled public areas, started to change under Ottoman administrative systems. The Ottoman architectural and institutional systems brought fresh elements to public space identity by superimposing their structures onto the existing Islamic urban design of Tripoli. The Second Ottoman Period brought substantial growth to Tripoli through expanded territory and increasing population numbers which created a dynamic relationship between established elements and new developments in local identity development. The Second Ottoman Period brought about the creation of urban function clusters, which included mosques and religious schools, markets, and burial sites that connected through public courtyards and streets, according to Elkekli (2014), Abdulla (2023), and Awaj (2025). The Ottoman urban design strategy created centralised public areas which united religious facilities with educational institutions and commercial activities through a single spatial design. The city's outer defensive walls saw the establishment of new public areas which addressed population growth and expanded the local character of Tripoli into newly developed suburban areas. Markets functioned as essential community centres which brought people together through their combination of economic activities and social and cultural exchanges. The Ottoman period markets functioned as commercial hubs which established themselves as permanent landmarks that united Tripoli's Islamic past with its Ottoman present.

Figure 1.4: The Ottoman early urban activities outside the city walls around 1910 (Mezughi and Abdulla, 2023, as cited in Awaj, 2023)

El-Hasumi (2018) demonstrates that the peripheral markets established during the Second Ottoman Period became essential elements of Tripoli's urban development, as they supported the city's increasing population and economic activities. The city received its first contemporary planning concepts, which established essential public facilities, including educational institutions, medical facilities, postal services, and public gathering areas (Carmona, 2019). The old city walls received new urban planning systems from local authorities which strengthened administrative operations and technical supervision (Silva, 2016). The markets served dual purposes because they enabled commercial activities and social connections while displaying local cultural elements that showed how the city adjusted to changing economic and social conditions. The Italian colonial period (1911–1943) brought a complete transformation to Tripoli which completely altered its physical layout and cultural character. The Italian government brought European urban planning concepts to Tripoli which replaced the traditional Islamic city layout with a structured design featuring monumental architecture (Awaj, 2024). The historic medina received new development through the construction of broad streets and designed public spaces and contemporary infrastructure, which served to demonstrate colonial power while bringing modernisation to the city (El-Hasumi, 2018).

The colonial master plan established administrative, commercial, and civic zones, which combined public areas with innovative architectural designs. The North African colonial network received its central position through Tripoli's alignment with Italian metropolitan design principles, according to Abdulla (2019) and Awaj (2025). The social usage of squares and markets by residents continued because they transformed modern spaces into cultural practice areas. The establishment of Cathedral Square as Algeria Square in 1939 marked a crucial moment when Tripoli underwent its modernisation process. The Italian regime used public space redesign to display modernity, yet unintentionally developed a mixed urban environment. The combination of colonial buildings with local activities resulted in a dual identity that merged Islamic traditions with European design elements throughout the city. The urban design and historical heritage of Tripoli from the past continue to influence its present-day appearance and shared historical record (Fuller, 2000; El-Allous, 2016).

Figure 1.5: Development plan for Tripoli 1914 (Abdulla, 2023)

Figure 1.6: Seafront and the Corniche with a pedestrian pathway (Awaj, 2025)

The Italian reconfiguration of Tripoli's urban core in the early 20th century represented more than aesthetic enhancement—it redefined the city's spatial and cultural identity. Guided by European planning ideals, Italian authorities sought to construct public spaces that embodied both functionality and political symbolism. One of the most prominent examples was the establishment of a major plaza near the old city gates and the historic castle, which, as Micara (2021) notes, became the principal civic and social space of colonial Tripoli. These interventions were deeply political. The new squares and avenues were designed not only for public gatherings but also as stages for military parades and displays of colonial authority, reinforcing the dominance of the Italian regime. Urban form thus became a tool of power, translating political control into spatial order. Parallel to the internal restructuring, the coastal edge of Tripoli was reshaped through the construction of a new seafront and arterial road that linked the traditional quarters with emerging modern districts. This project, while improving accessibility and circulation, also reflected the colonial ambition to integrate modernity into the local context while maintaining control over trade routes and movement. The result was a hybrid urban identity—European in form but still embedded within

the rhythms of Tripoli's local life. Following the end of Italian rule in 1943 and Libya's independence in 1951, the city entered a new phase of transformation. The post-independence period, intensified by the discovery of oil in 1958, redefined the city's spatial hierarchy. Libyan citizens gained full access to previously restricted colonial zones, yet modernisation brought unintended consequences. The construction of a coastal highway severed the traditional connection between the city centre and the sea, fragmenting the historic urban fabric and weakening the city's maritime identity. The waterfront, once central to public and economic life, was reoriented toward port expansion—symbolising a shift in Tripoli's relationship with its own heritage and spatial memory.

Figure 1.7: Locations of the main three buildings were removed (Awaj, 2024)

The urban character of Tripoli underwent a major evolution during the middle part of the twentieth century. The destruction of Real Miramare Teatro, the National Insurance Institute, and the Sidi Hammoda Mosque during the Martyrs' Square redevelopment brought about modernisation yet resulted in cultural heritage

destruction (Abdulla, 2023; Awaj, 2025). The construction of this new public area demonstrated national pride but simultaneously destroyed essential architectural and spiritual elements of the city. The redesigned square established itself as a national symbol which displayed Libya's developing national identity yet revealed the conflict between protecting historical heritage and advancing modernization. The historical core of Tripoli has used public areas to display its changing social and political nature throughout history. Under Ottoman rule, squares operated as commercial areas and places of worship, which united public activities with religious activities and community activities. The Italian colonial administration established new public areas in the European section which created social segregation because these areas served mainly for settlers and colonial power demonstrations. The Libyan people took back control of these public areas after independence in 1951 to use them for expressing themselves and building community ties. The capital's local identity found its foundation through three main squares, which included Martyrs' Square, Algeria Square, and Ghazala Square.

The public areas of Tripoli have lost their connection with local residents over the last few decades. The city's social and cultural areas have declined because of uncontrolled urban development, poor planning, and insufficient upkeep of public spaces. The historic function of public spaces in Tripoli faces challenges because these areas have lost their ability to bring people together for social interaction and cultural identity development. The implementation of national policies for public land use remains weak because socio-economic challenges and poor execution prevent these areas from becoming accessible to the public. The city of Tripoli faces an essential moment because its historical depth faces threats from declining public areas. The restoration of social unity in Tripoli depends on urban design that respects local culture and participatory planning to bring back its unique character in modern Libyan cities (Abdulla, 2019).

Figure 1.8: Moving the waterfront into the sea to create the highway (Abdulla, 2023).

2.2.2 Evolution of the cultural heritage concept in urban contexts

The study of cultural heritage evolution has shifted its attention from protecting single artefacts to include both extensive spatial elements and intangible cultural aspects. The Athens Charter (1931) established an

initial priority for protecting monuments because of their artistic and historical importance. The UNESCO World Heritage Convention (1972) expanded the protection scope by establishing the safeguarding of complete sites that demonstrate outstanding universal value in historical, artistic, and scientific domains. The Washington Charter (1987) built upon heritage theory by protecting historic towns and urban areas through the recognition of their spatial patterns and their collective memory and urban form. The UNESCO Convention (2003) established formal recognition of intangible cultural heritage by defining oral traditions, performing arts, social practices and rituals, knowledge systems, and traditional craftsmanship as essential community heritage elements which support comprehensive heritage preservation.

UNESCO (2003) and Abdulla (2023) state that intangible heritage components cannot exist independently from tangible heritage components since they jointly form cultural identity and urban continuity. Historical city centre squares, according to Adishakti (2013), function as both physical infrastructure and as rich symbolic and socio-cultural dimensions which display local lifestyles and practices. The dual nature of heritage expression appears in Tripoli's historic core through both its spatial configuration and active experiences of its inhabitants. The 7th Symposium on African Heritage (IFSAH, 2013) emphasised the immediate need to safeguard historic city centre squares throughout Northeast Africa because of their deteriorating condition. These squares contain the genius loci, which represent the spiritual and cultural essence of each city, while previously functioning as dynamic civic and cultural centres (figure, 1.8, 1.9, and 1.10).

Figure 1.9: Martyrs' Square location (Source: adapted from Awaj, 2024)

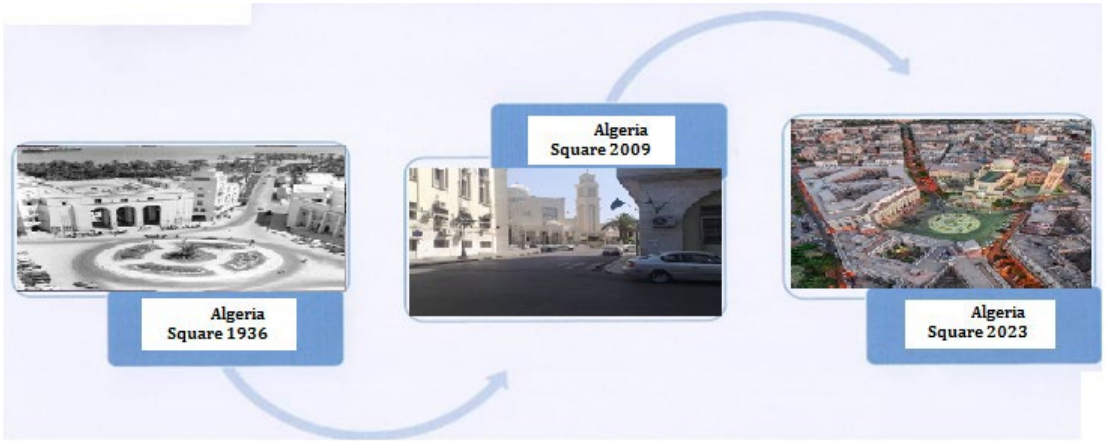

Figure 1.10: Algeria Square location (Source: adapted from Awaj. 2024)

Figure 1.11: Ghazala Square location (Source: adapted from Awaj, 2024)

2.3 Descriptive Analysis of the Visual Formation Characteristics of Urban Spaces in the City Centre of Tripoli

The research establishes the fundamental framework to study Tripoli's urban core through its Maidans network and its connection points via Omar Al-Mukhtar Street from the west and other major streets. The city's main square, known as Martyrs' Square, functions as both the symbolic and operational centre of Tripoli, where all major streets meet. The central node of the city features multiple secondary squares which include Algeria Square and Al-Ghazala Square as the main subjects of this descriptive analytical research. The research examines how the urban spaces developed their visual and morphological characteristics during the Italian colonial era which established Tripoli's architectural style and urban appearance. The squares function as fundamental elements which display the fundamental visual and spatial features of the city because they serve as active areas where people, buildings, open areas, residents, and pedestrians meet. The descriptive evaluation consists of six essential elements.

2.3.1 Structural Unity within the Study Area

The central urban design of Tripoli maintains a strong structural framework through its organised architectural sequence and uniform building types. The buildings throughout the study area present a unified colonial architectural style through their symmetrical frontages, arched pathways, and balanced building proportions, which create a single visual arrangement. The study area contains three squares which present distinct expressions of unity through their individual characteristics: Martyrs' Square serves as the political and symbolic heart of the city, while Algeria Square maintains spiritual and cultural significance because of its location near religious sites and historical buildings, and Al-Ghazala Square serves as a visual link to unite the central area with outer city districts. The Italian colonial period and its immediate aftermath brought a defined urban structure to Tripoli through architectural unity but subsequent building losses during later decades created visual and structural breaks that affected the city's original appearance.

2.3.2 Spatial Gradation and Urban Hierarchy

The central area of Tripoli shows a clear spatial organization because Martyrs' Square (formerly Green Square) functions as the main node where activities reach their peak and visibility and movement reach their highest points. The main streets lead to this central civic area which functions as the visual peak and magnetic point of Tripoli's urban design. The central point of the city serves as a starting point for people

to move toward Algeria Square and Al-Ghazala Square through radial directions. The city's historical development pattern becomes visible through the regular spatial rhythm which emerges from street to square transitions. The continuous path of movement channels which runs through colonnaded areas and streetfronts creates an experiential connection between commercial areas and cultural spaces and public areas throughout the central district. The physical arrangement of spaces in Tripoli represents both the physical organization of the city and the social and cultural transformations that have occurred throughout its history.

2.3.3 Proportional Harmony and Scale Relationship

The city centre of Tripoli shows a deliberate design approach through its street dimensions, building heights, and public area sizes, which create a balance between large-scale structures and human-friendly spaces. The street dimensions in relation to building heights between 2:1 and 3:1 create a Mediterranean urban space that feels contained yet maintains grandeur in key areas including Martyrs' Square. The 20-meter building height supports the square's monumental design without disrupting the structured design of the entire area. The uniform proportions between urban spaces and architectural structures create a unified connection between public areas and building structures. The combination of Algeria Square's relaxed building heights and spacious layout creates a close-knit civic environment, but Al-Ghazala Square achieves visual equilibrium through its symmetrical design and its connection to nearby transportation routes. The city maintains its historical character and spatial order through these proportional relationships which form the basis of its design.

2.3.4 Clarity of Urban Identity

The city center of Tripoli preserves its local identity through its planned street arrangement and consistent urban design. The colonial planning approach that employed geometric structures and precise alignment methods produced a unique architectural style which combines Mediterranean elements with North African and Italian design features. The architectural elements featuring arched façades and rhythmic cornices and plastered finishes demonstrate both historical preservation and local design adaptations. The urban structure becomes easier to understand because of its simple building designs and uniform building heights and defined spatial zones. The area evolved from its colonial architectural heritage into a Tripolitan identity marker which shows how residents protect their cultural heritage during contemporary times.

2.3.5 Functional Expression and Socio-Spatial Dynamics

The administrative and social centre of colonial life operated from the city centre of Tripoli during the Italian colonial era. The urban design of the city incorporated European architectural standards while accommodating the cultural practices of its inhabitants. The ground floors of Martyrs' Square buildings functioned as commercial zones, cafes, and market spaces, while Algeria Square's Post Office building served as a central gathering point for public activities. The city's design pattern shows how colonial social and economic systems became physically integrated into its architectural structure. The urban structures from the past continue to function as active city spaces, which demonstrate that Tripoli's central areas maintain their role as vital components of urban life and historical heritage.

2.3.6 Distinctive Character and Cultural Continuity

The central section of Tripoli displays a unique architectural style which combines Italian colonial elements with local urban adaptations to create a distinct cultural environment. The architectural elements which include balanced proportions and material choices and repeating building faces demonstrate how social unity develops through shared identity and urban connection. The combination of public spaces with street networks and diverse building types creates an environment where people feel connected to their

community while experiencing historical and present-day uses. The combination of colonial architecture with local modifications has established Tripoli's permanent urban identity which showcases its heritage value and its role as a living example of Libyan urban development. The visual and spatial elements of Tripoli's urban center exist as an essential part of its local identity according to the descriptive analysis. The three squares of Martyrs' and Algeria and Al-Ghazala present unique historical narratives through their combination of political meaning and cultural elements and physical design. The urban system unites these elements to establish Tripoli as a Mediterranean–North African capital which maintains its identity through historical development and ongoing transformation.

2.4 Descriptive Analysis of the Visual Formation Characteristics of Urban Spaces in the City Centre of Tripoli During the Post-Italian Colonial Period

The city of Tripoli underwent major urban and social changes after Italy lost control of its colonial territory. The European-planned urban structure from colonial times clashed with the traditional Arab-Islamic social organisation that had shaped the city throughout history. The clash between Arab-Islamic cultural principles and European planning principles resulted in multiple urban problems which affected both the physical layout and social dynamics of Tripoli's central district.

2.4.1 Urban and Cultural Transformation

The central areas of Tripoli underwent a complex transformation through field observations and on-site analyses which took place in the case-study zones. The post-colonial transformation brought about changes that combined physical modifications with cultural and ideological shifts. The new Libyan political system worked to establish local heritage and Islamic traditions by transforming existing colonial spatial frameworks. The cultural preservation efforts through this process resulted in the disappearance of specific historical and architectural features which previously created a unified visual identity for the city centre.

2.4.1.a Martyrs’ Square: Loss and Continuity of Identity

The historic center of Tripoli known as Martyrs' Square experienced significant changes following the colonial period. The public area lost its architectural framework because multiple essential buildings underwent destruction or received modifications which split the urban boundary and diminished its original design elements. The architectural unity of the square disappeared while its unique urban character started to fade away. The square lost its architectural unity while its unique urban character faded away. The buildings surrounding the square maintain their original style which shows colonial-era design elements through their balanced proportions and their architectural design and structural design. The city of Tripoli exists between two historical paths because it tries to protect its inherited architectural style while creating new cultural values.

2.4.1.b Algeria Square and Al-Ghazala Square: Functional and Spatial Shifts

The urban design and axial layout of Algeria Square and Al-Ghazala Square maintained their original form throughout their development process. The physical layout of streets and movement routes maintained their original form but the areas developed fresh social and cultural significance. The postcolonial cultural transformation of Tripoli turned Algeria Square from its European religious site into the Islamic Call Mosque Square (Midan al-Da‘wa al-Islamiyya). The city displays its national and spiritual identity through the urban symbol adaptation process which occurred in its historic fabric. The construction of a coastal roadway severed the historic seafront link between the urban core and Al-Ghazala Square which resulted in a new spatial arrangement. The physical barrier between Tripoli and its coastal area through this intervention established a distinct visual and cultural identity that separated the city from its waterfront.

2.5 The Postcolonial Urban Image

The city of Tripoli now presents a new urban appearance because its heritage elements interact with modern development while its historical sites undergo new interpretations. The postcolonial era established an intermediate stage of development which unites Italian architectural elements with national and Islamic design principles. The city center of Tripoli presents a dual visual experience because it maintains colonial architectural patterns and building types while actively displaying local cultural elements through spatial transformations and new urban uses. The study of Tripoli's city center during the post-Italian colonial period shows how cultural changes transformed both urban structures and community identities. The two squares show different responses to colonial loss because Martyrs' Square shows architectural disarray but Algeria Square and Al-Ghazala Square adapt through functional and semantic transformations. The city's urban areas function as active historical records which show Tripoli's urban development from colonial rule to local reinterpretation while Arab-Islamic heritage establishes itself as the dominant force in modern urban design.

2.6 Creating Successful Places framework

In recent planning discourse, the National Planning Policy Framework (NPPF) has emphasised the importance of incorporating the social dimension into the design and evaluation of urban development. Responding to this directive, the Berkeley Group, in collaboration with Tim Dixon and the Social Life organisation, developed a comprehensive framework aimed at assessing social sustainability within new housing and mixed-use developments. The significance of this framework lies in its recognition that the success of built environments is not solely determined by physical form, but also by the strength of social networks, user experience, and the expression of local identity within those environments. The Creating Successful Places framework consists of 13 evaluative criteria, addressing key dimensions such as accessibility, safety, neighbourly interaction, participation, and identity formation. The framework posits that community cohesion and social meaning emerge from the interplay between spatial design and lived experience, suggesting that well-designed public realms must enable users to feel not only safe and comfortable, but also culturally recognised and emotionally connected to place. These criteria were tested across four distinct development contexts in the United Kingdom, demonstrating the framework's adaptability to different urban scales, densities, and social conditions.

Figure 1.12: Creating a successful places framework

Source: Creating a successful place, A toolkit, Berkeley Group (2015)

Parallel to this, the Project for Public Spaces (PPS) initiative offers a complementary model for evaluating the quality and liveability of public spaces. PPS identifies four core attributes of successful urban spaces Access and Linkage, Comfort and Image, Uses and Activities, and Sociability which collectively determine whether a public space is capable of supporting vibrant and meaningful social life. Notably, the PPS framework shifts the focus from the architectural object to the experiential and cultural value of place, highlighting that identity emerges not simply from visual form but from patterns of collective use, memory, and interaction. When analysed in relation to the public squares of central Tripoli Martyrs' Square, Algeria Square, and Ghazala Square both frameworks reveal critical insights into the relationship between spatial structure and local identity. These squares function historically as sites of collective gathering, political expression, and cultural continuity, serving as symbolic anchors in the city's urban fabric. Yet their contemporary performance varies, influenced by shifting socio-political conditions, changes in accessibility, modifications to surrounding building façades, and evolving patterns of everyday use. Through the Berkeley lens, the social sustainability of these squares depends on their capacity to foster interaction, provide safe and inclusive environments, and maintain elements of cultural recognizability that affirm the identity of Tripoli's residents. Through the PPS framework, the success of these squares is evaluated by the degree of activity they accommodate, the legibility of spatial connections, and the extent to which they support spontaneous and meaningful encounters among different social groups.

Figure 1.13: What makes a successful place?

Source: Taken from Project for Public Spaces (2014)

Thus, both frameworks—when integrated—underscore that local identity is not a passive heritage attribute, but an active component of social sustainability that must be intentionally reinforced through design, management, and public participation. For Tripoli, safeguarding the identity of its central squares requires preserving their historical symbolism, ensuring equitable access, and enabling collective cultural practices to continue unfolding within these spaces.

The reviewed literature highlights that the physical form, functional performance, and experiential qualities of public spaces play a critical role in shaping local identity, influencing social interaction, perceived safety, and environmental comfort. The way urban squares are structured and used affects how individuals connect with their surroundings, how they recognise cultural continuity, and how they experience a sense of belonging. In the context of Tripoli's city centre, public squares operate not only as circulation spaces but as symbolic and social landscapes where community identity is reinforced through daily practices and collective memory. The literature further emphasises that meaningful public spaces are those that support social cohesion by offering environments that encourage interaction, gathering, and shared cultural expression. To meet this role effectively, urban squares must provide comfort, climatic responsiveness, accessibility, and opportunities for both active and passive engagement. In Tripoli, where cultural life is historically tied to the street and the square, such qualities are especially important for sustaining the continuity of local identity across generations.

Moreover, the literature identifies that social life and liveability in public spaces are influenced by multiple spatial and perceptual criteria. Yet, existing evaluation frameworks often overlook local identity as a core component of users' satisfaction and emotional attachment. This research, therefore, places local identity at the centre of assessing the urban quality of the squares in Tripoli, arguing that a public space that does not reflect its community's cultural narrative risks becoming fragmented, generic, and socially disconnected. In this respect, urban designers, architects, and planners must expand their awareness of how cultural

memory, symbolic landmarks, spatial history, and everyday social behaviours contribute to shaping the identity of public squares. Applying these insights to design and planning decisions in Martyrs' Square, Algeria Square, and Ghazala Square is essential to ensure that the redevelopment of Tripoli's city centre does not merely modernise the urban environment but also preserves, expresses, and strengthens the city's cultural identity.

3. Methodology

3.1 Research Design

The study also employed mental mapping as a participatory visual technique to document how individuals recall and interpret urban space. Participants sketched their mental images of the squares, identifying landmarks, activity zones, and spatial boundaries that hold personal or communal meaning. These cognitive maps highlight how memory and identity are materially and emotionally embedded in Tripoli's urban fabric. Finally, systematic field observation was conducted following Sibley and Hadjri's (2018) behavioural mapping framework. Researchers recorded patterns of movement, duration of stay, and social interactions across different times of day. Complementary land-use and urban form analyses examined how surrounding functions, building types, and spatial configurations influence the vitality and accessibility of the squares. Together, these datasets reveal how the morphology of public spaces sustains or constrains expressions of local cultural identity. Through this integrated qualitative approach, the research bridges theoretical discussions of memory and place-identity with empirical observations from Tripoli's historic core. The findings provide a nuanced understanding of how public squares function as living archives of local identity, connecting collective memory, spatial experience, and socio-cultural continuity in Libya's urban context.

The research design combines spatial observation with semi-structured interviews and visual documentation to analyze how local identity appears in Tripoli's public squares. The research design employs multiple qualitative methods to study how three Tripoli public squares (Martyrs' Square, Algeria Square and Ghazala Square) display collective memory and local identity through their existing and original data. The research applies identical analytical procedures to all sites to evaluate their physical transformations and cultural preservation and social spatial worth. The research starts by conducting a complete review of existing documents before it proceeds to collect more information. The research incorporates urban policy documents and strategic plans and historical records and theoretical writings and visual archives containing maps and films. The research materials enable researchers to track the development of Tripoli's public squares throughout time while local urban identity shifted because of social and governmental transformations. The research employs qualitative approaches to study how people develop identity through their individual and collective memories of specific locations. The research team administered a structured open-ended survey to different participants to collect their personal accounts about their daily routines and their emotional bonds with the three public squares. The survey examines users' physical space perceptions and their social activities and memory effects on local identity development in contemporary urban environments. The research team conducted semi-structured interviews with 18 expert participants who worked as architects and planners and historians. The expert interviews provided essential professional knowledge about how public squares safeguard the cultural heritage and urban memory of Tripoli's historic downtown district. The participants examined both the symbolic elements and design components and social and cultural development patterns of these spaces throughout history.

The research employed mental mapping as a participatory visual approach to document how people remember and understand urban environments. The participants used mental drawings to depict public spaces by indicating essential areas and active zones and boundaries that held personal or communal significance. The cognitive maps demonstrate how memory and identity manifest as physical and emotional elements which permeate throughout Tripoli's urban design. The researchers conducted systematic field observations by implementing Sibley and Hadjri's (2018) behavioral mapping system. The researchers

documented human activities and time spent in the areas and social interactions that took place at different times during the day. The research evaluated how public square accessibility and active use of public squares depends on surrounding land uses and urban design elements. The research data reveals how public space design elements either enable or restrict the display of local cultural identity. The research unites theoretical knowledge about memory and place-identity with empirical data from Tripoli's historic center through its comprehensive qualitative research approach. The research provides detailed information about how public squares protect local identity through their function as active spaces that store collective memory and generate spatial experiences and social traditions in Libyan cities.

4.1 Local Identity and Urban Transformation in Tripoli's Historic Core

The research conducts a detailed evaluation of Tripoli's historic center through its spatial development and social activities and visual characteristics across different historical periods. The research investigates historical development and planning interventions and their impact on local urban identity through comparative and interpretive analysis of Martyrs' Square and Algeria Square and Ghazala Square. The three squares located between the Mediterranean coastline and Old City (Medina) function as Tripoli's urban center while displaying its accumulated cultural heritage. The city's urban history appears through each square which shows the development from Ottoman times to Italian colonial period through its unique architectural features. The research combines archival analysis with spatial documentation and on-site observation to understand both physical and symbolic elements of these public areas. The research shows that Tripoli's city center exists through the combination of Medina's organic layout with the colonial-era radial-grid system. The city's local identity exists through the ongoing struggle between its historic enclosed spaces and its modern open public areas. The research shows that coastal geography and urban growth patterns in the north direction led to the development of a distinctive urban form which unites Mediterranean and Islamic and European planning elements. The research shows that Tripoli's central public spaces function as physical links between areas while preserving cultural heritage that represents the city's historical memory and its identity. The squares demonstrate the conflict between urban development and cultural preservation through their design which shows the changing social structures of Tripoli and its ongoing process of defining its local identity.

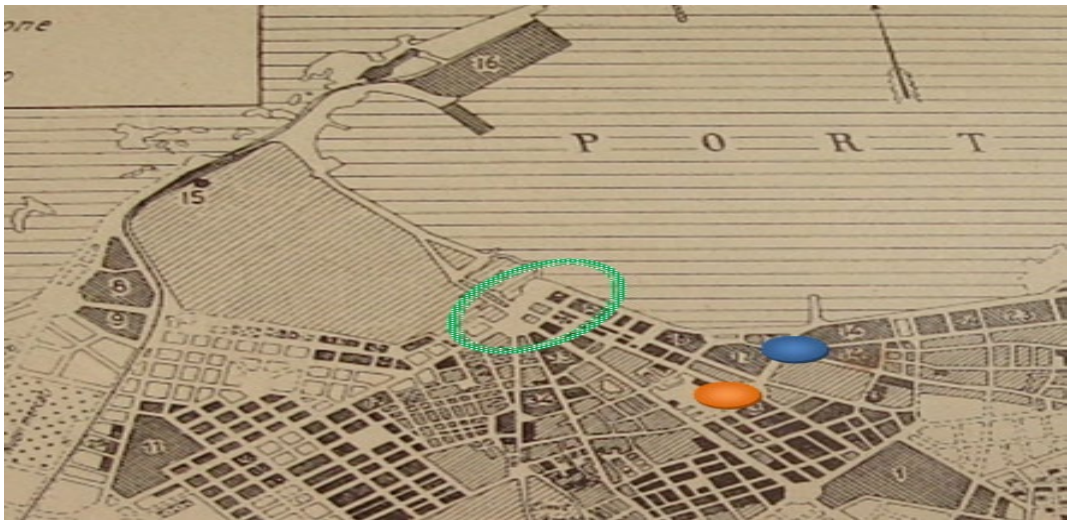

Figure 1.14: presents the area of Italian colonial influence on the historic centre of Tripoli, highlighting its spatial configuration during the colonial period (Mondadori, 1930, p.142)

Figure1.15: illustrates the study area during the post-Italian colonial period, as captured via Google Earth imagery

The urban features of Tripoli establish its structural and visual identity through its morphological shape and spatial arrangement and historical buildings and visual design elements. The local urban identity of Tripoli emerges from these unified elements which demonstrate how traditional elements have merged with outside influences since ancient times. The built environment of Tripoli developed through successive planning strategies and architectural styles which expressed the cultural values and organizational systems of their respective time periods. The city developed its unique hybrid character through the combination of its original Islamic and Mediterranean architectural elements with colonial-era building designs and urban planning systems. The city developed its shape because of its coastal location and its expansion along the Mediterranean coastline toward the north. The Italian period introduced a radial-grid system which transformed the city by establishing a manufactured layout that disrupted the natural arrangement of the ancient medina. The present-day urban layout of Tripoli shows two distinct identities because it unites its ancient medina with its colonial expansion. The medina maintains its Islamic urban design through its dense internal organization yet the colonial section follows European modernist architectural principles. The city's physical layout shows its different historical stages through its conflicting architectural styles and public areas and movement systems which showcase its multicultural heritage and natural surroundings.

4.2 The Urban Fabric and Local Identity of Tripoli's City Centre

The historic core of Tripoli displays intricate spatial patterns which developed through different historical periods to create distinct cultural and architectural features. The medina's disordered street pattern and courtyard design emerged from Islamic urban planning principles which followed social and religious customs of the time. The original urban structure of Tripoli established its first identity through its design which combined private spaces with public areas near important religious sites and commercial centers. The city started to expand past its historical boundaries when Italian colonial authorities established a new urban design system. The city underwent a transformation which brought forth a new spatial arrangement through the implementation of straight streets and rectangular blocks and public spaces that followed European design principles for creating symmetrical and open public areas. The architectural elements of the colonial area displayed monumental designs and rhythmic archesque arcades and classical dimensions to represent political power and cultural superiority while transforming the city's appearance. The medina and colonial extension exist as separate urban elements which unite into a single urban system that represents Tripoli's diverse cultural heritage. The remaining city wall serves as a physical separation while maintaining its role as a cultural boundary which connects two separate yet connected urban areas. The street network and built environment and public spaces in Tripoli's city center demonstrate how the city

maintains its historical heritage through the combination of traditional practices and colonial influences and coastal environmental factors.

4.3 Key Architectural and Historical Components Reflecting Local Identity in Tripoli's City Centre

The city center of Tripoli maintains its architectural and spatial character because of its historical layers which include the Red Castle (Al-Saraya Al-Hamra) and the Old City Wall in Martyrs' Square. The structures represent the cultural and civilisational exchange between Islamic and European traditions which created permanent marks on the city's architectural design and historical records. The square maintains a peaceful atmosphere through its organized layout and uniform architecture which shows how local traditions met with colonial design elements. The former Cathedral Building in Algeria Square serves as the most recognizable representation of Tripoli's colonial heritage. The building design and architectural elements follow European church design conventions yet they maintain physical evidence of the complicated colonial period. The square serves as a public area for people to meet while preserving historical records that connect modern Tripoli to its diverse past. Ghazala Square near the Mediterranean coastline establishes a physical and visual link between the city center and the ocean to showcase Tripoli's coastal heritage. The connection between the city and the Mediterranean Sea maintains Tripoli's historical dependence on this waterway for economic and cultural purposes. The three urban areas of Martyrs' Square and Algeria Square and Ghazala Square showcase Tripoli's local identity through their combination of historical records and cultural heritage and physical spaces which use architecture to show both past and present development.

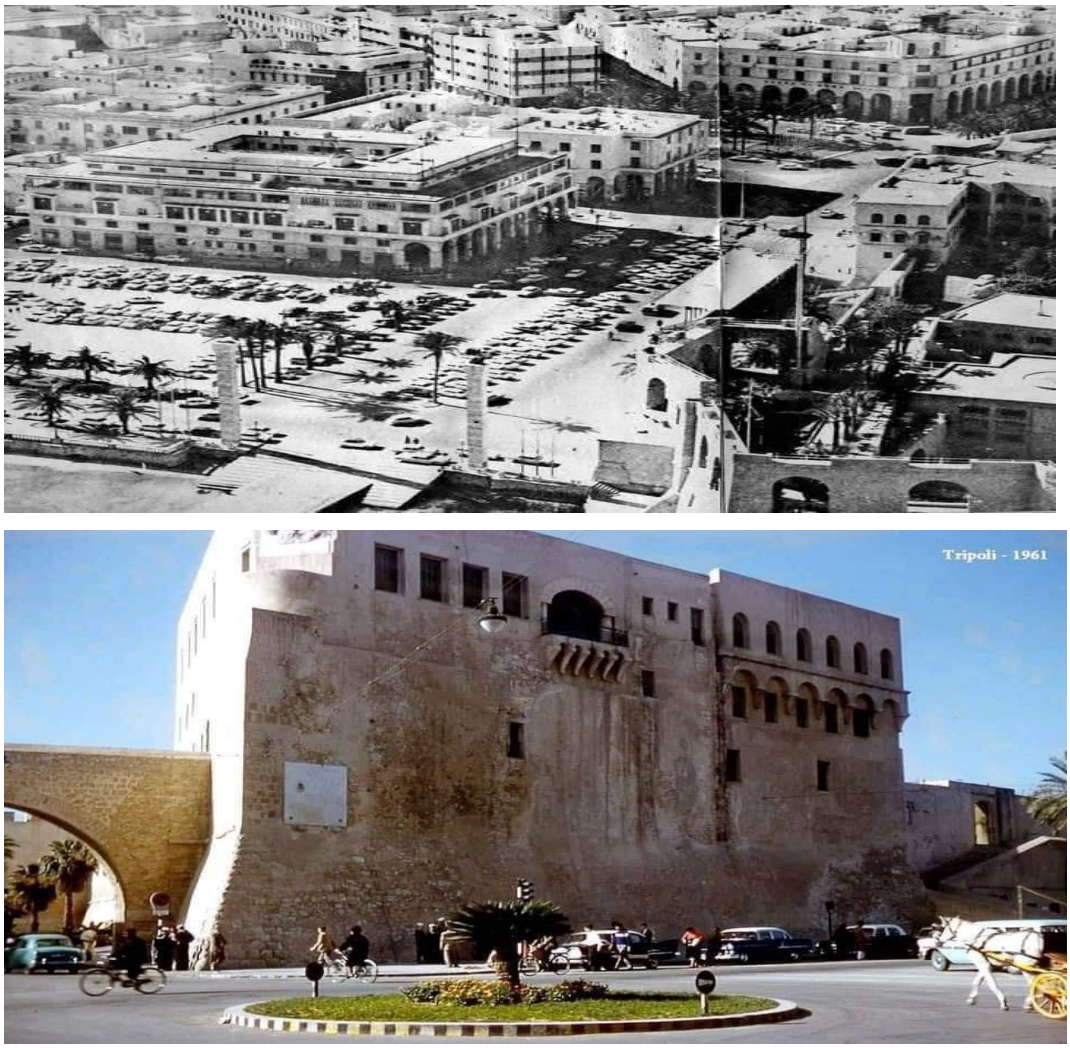

Figure 1.16: illustrates one of the most significant historical buildings in the city of Tripoli the Red Castle (Al-Saraya Al-Hamra Castle) which represents a key architectural landmark that embodies the city's historical character (Mondadori, 1937, p. 133, as cited in Awaj, 2025)

Figure 1.17: presents Algeria Square, highlighting its inclusion of one of the most prominent historical features the Cathedral building, which stands as a significant architectural and cultural landmark in the urban history of Tripoli (Mondadori, 1937, p. 131, as cited in Awaj, 2025)

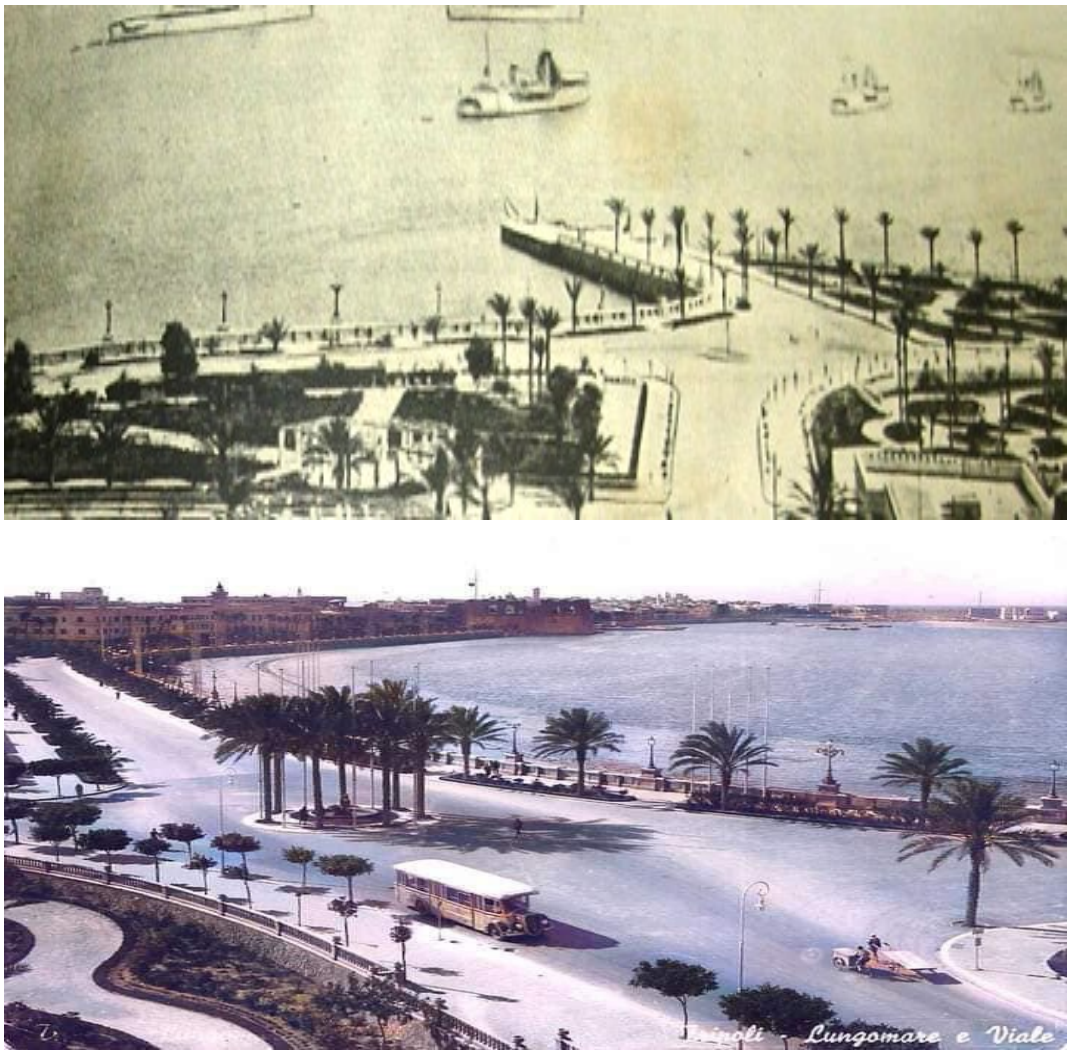

Figure 1.18: illustrates the seafront overlooking Ghazala Square, delineating the historical value embedded in the original design of the square (Mondadori, 1937, p. 133).

4.4 Urban Design Characteristics Analysis of the Case Study Area: Visual and Morphological Composition Reflecting Local Identity

The city centre of Tripoli displays complex urban design elements which combine visual aspects with spatial organization and cultural characteristics to establish its local identity. The visual analysis of the city starts with its urban form and morphology because these elements establish the physical structure of the city. The city's visual identity emerges from its urban shape and built fabric organisation and its historic buildings and informal settlements which function as visual landmarks. The physical elements of Tripoli interact with its social environment to create an identity that developed through historical events and cultural transformations.

4.4.1 Morphological Components of the City

The historical development of Tripoli through different time periods has created permanent changes in its urban design and architectural features. The city's design emerged from its natural environment and human settlement patterns which created a relationship between traditional practices and outside cultural elements. The historical urban growth of Tripoli shows how colonial powers transformed its architectural design and urban planning systems which the city now uses to define its modern character. The

architectural structures of building arrangements and street patterns and public areas function beyond their practical uses because they contain the cultural heritage and historical memories of the community. The colonial planners created strict geometric street patterns and large public areas which created a distinct contrast with the natural irregular pattern of the old medina. The combination of colonial planning systems with traditional Islamic urban design elements produced an urban identity that united European design principles with local spatial traditions. The city's development pattern has been heavily shaped by its coastal location and its position in North Africa. The historic center of Tripoli serves as the central point for its radial street pattern which extends toward the Mediterranean Sea while demonstrating the city's natural environment adaptation and its historical role as a trading center. The city maintains its current visual appearance because the historic medina maintains its dense structure while the colonial expansion area follows a structured grid pattern which creates a spatial dialogue between ancient and modern elements. These morphological elements function as spatial stories which show the historical development of the city through time. The different stages of development between the Islamic medina and Italian colonial additions have created a complex urban identity which unites historical memories with geographical elements and cultural traditions. The architectural design of Tripoli's central area functions as an active historical archive which displays the city's social and cultural changes while showing its ability to survive and adapt in Libya's historical context.

4.4.2 General Urban Layout of Tripoli's City Centre: Morphology and Local Identity

The overall urban configuration of Tripoli's city centre is fundamentally shaped by its geographical and natural context, which is defined by its strategic position along the Mediterranean coast and its elongated coastal strip forming the city's northern boundary. Located in the heart of North Africa, Tripoli has been influenced by successive civilisations, each leaving a distinct imprint on its urban form. This historical layering produced a dual character within the city: the traditional, heritage-rich old city and the modern colonial city, each exhibiting a unique spatial organisation. The divergence between these two urban layers is evident in the composition of building blocks, open spaces, and circulation networks, which collectively define the general city plan and the identity of Tripoli's urban core.

4.5 Urban Fabric of Tripoli's City Centre

The central area of Tripoli displays a historical development of urban planning and architectural designs which have added unique elements to the city's character. The historic medina serves as the foundation of Tripoli's urban development which emerged during its initial stages. The city developed from its central point into a structured geometric pattern during the Italian colonial era. The modern development brought forth radial street designs and axial boulevards and standardized public areas which created a contrasting environment to the medina's tight organic structure. The colonial expansion brought European architectural styles which produced buildings with grand entrances and balanced designs and substantial public and residential structures. The structures from Italian colonial times both demonstrate colonial cultural impact and create a unified symbolic urban space that defines local identity. The arrangement of buildings surrounding public areas between squares and plazas produces a harmonious connection between ancient and contemporary urban elements which maintain a single historical thread of urban identity. The historic section maintains a distinct character from the contemporary area yet they share a unified urban connection. The old city wall serves as both a physical boundary and a unifying element which separates the medina from the modern grid while maintaining their connection. The street networks and squares and building blocks from both areas unite to create an urban fabric which represents Tripoli's diverse historical background. The cityscape unites historical elements with cultural heritage and contemporary urban development through its fabric which maintains the local identity of the city. (The spatial relationships between old and new urban fabrics along with their integration are shown in Figures 30.3 and 31.3.

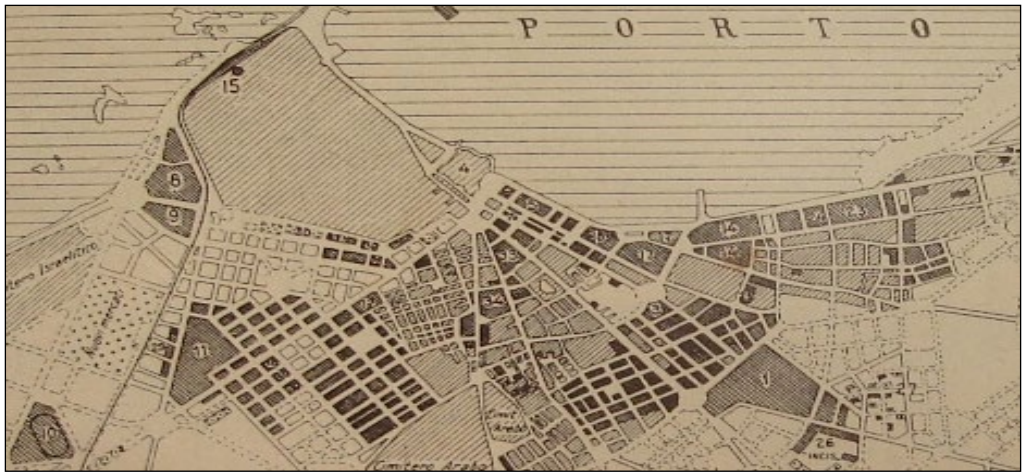

Figure 1.19: illustrates the seafront overlooking Ghazala Square, delineating the historical value embedded in the original design of the square (Mondadori, 1937, p. 133).

4.6 Architectural Components with Historical and Urban Significance in Tripoli's City Centre

The most prominent architectural and historical elements shaping the urban spaces of Tripoli's city centre are the Red Castle (Al-Saraya Al-Hamra) and the Old City Wall, both situated within Martyrs' Square. These structures embody a unique visual and cultural identity, reflecting the coexistence of two distinct civilisations and their associated cultural influences during a critical historical period. The design and spatial organisation of Martyrs' Square demonstrate a deliberate architectural coherence, with repetitive and harmonious styles that reinforce the local identity of the square. These characteristics not only provide aesthetic unity but also cultivate a deep historical and cultural awareness among the city's residents, linking contemporary urban experience to centuries of heritage. Similarly, Algeria Square, dominated by the former Cathedral building, exemplifies the imprint of Italian colonial architecture. The cathedral serves as a potent cultural and visual landmark, conveying the religious, social, and ideological narratives of its era. Its architectural form and placement within the square contribute to the square's identity, offering a tangible connection to the colonial history while reinforcing the residents' collective memory of the city. The square

thus functions as both a spatial and symbolic anchor within Tripoli's urban fabric, highlighting the local identity shaped by colonial-era urban design.

Ghazala Square, positioned along Tripoli's waterfront, demonstrates the interaction between urban morphology and the city's coastal setting. Its strategic location and axial orientation establish a strong visual and spatial connection between the seafront and the central urban grid. This linkage not only enhances the functional and aesthetic experience of the square but also reinforces the urban identity by integrating the waterfront into the daily life and spatial perception of the city. Through these three squares, the architectural and historical components collectively convey Tripoli's layered identity, combining civic, cultural, and spatial dimensions to articulate a distinctive sense of local urban heritage. (Figures 33.3, 34.3, and 35.3 illustrate these key architectural and urban features.)

TRIPOLI. - Strada Azizia, Giorno di Festa

Figure 1.20: illustrates the most significant historical buildings that characterise the heritage features of the city of Tripoli, including the Red Castle (as referenced in Mondadori, 1937, p. 133.(

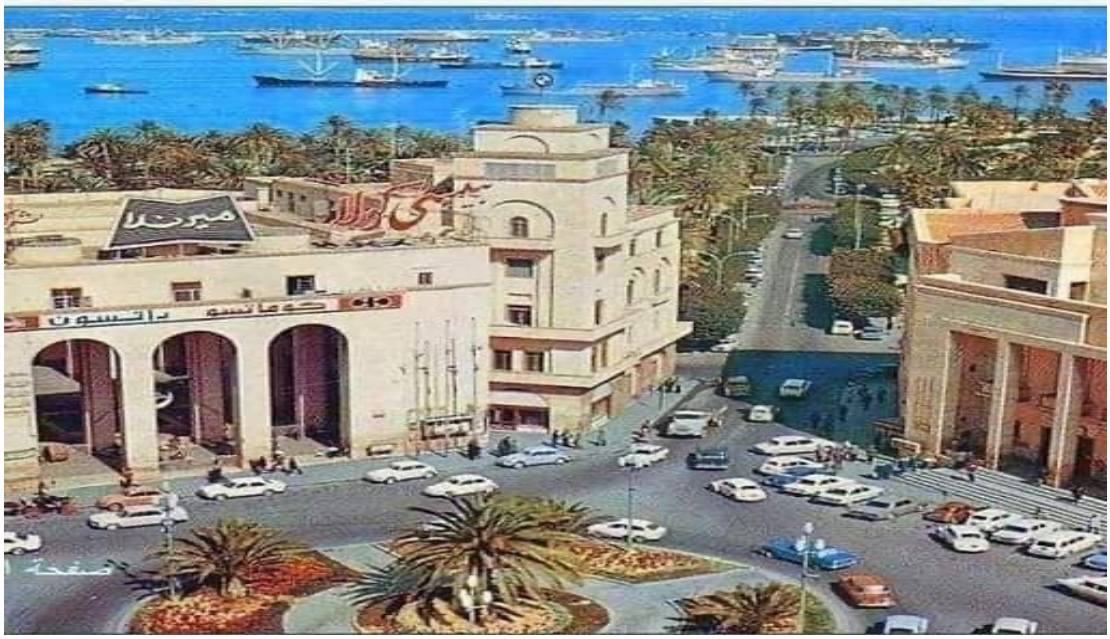

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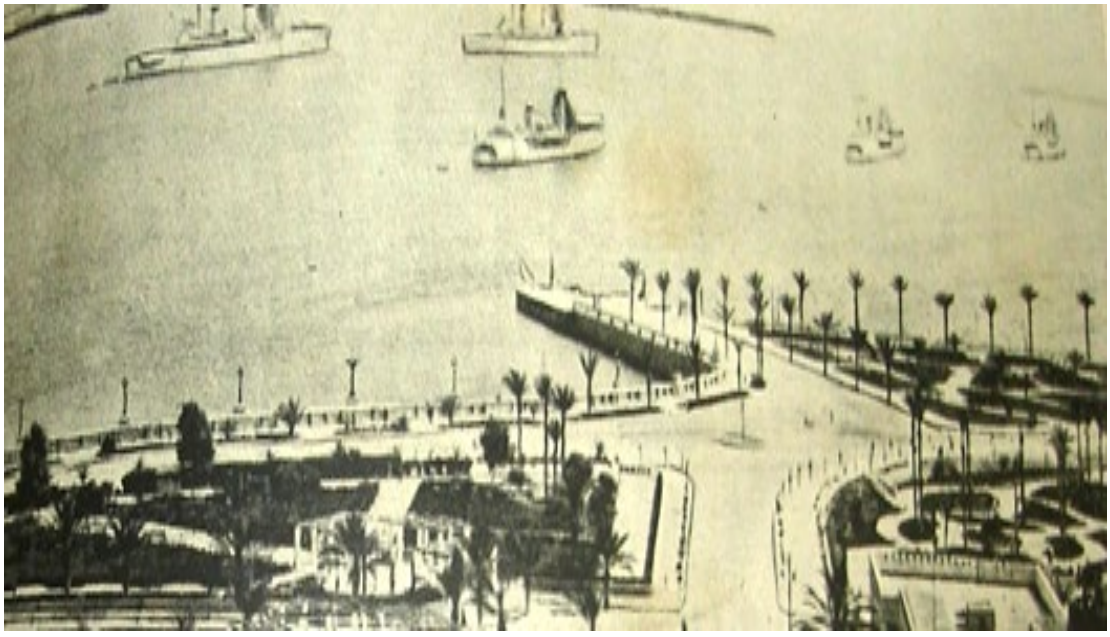
Figure 1.21: presents Algeria Square, highlighting its principal historical features, most notably the Cathedral Building (Mondadori, 1937, p. 131(



Piazza della Gazzella
con la famosa Fontana,
la più fotografata di
Tripoli.

Figure 1.22 illustrates the waterfront façade overlooking Ghazala Square, which defines the historical value of the site where the square was originally designed (Mondadori, 1937, p. 133)

4.7 Characteristics of Urban Visual Composition and Their Influence on Tripoli Visual Survey of Urban Spaces in Tripoli's City Centre

The complete visual evaluation of Tripoli's city center reveals its urban morphology through academic research combined with direct observations. The urban structure of Tripoli develops from three core components which include spatial organization and architectural design and public square planning. The city framework elements work together to form a single urban design which displays both local cultural traditions and historical growth of the region. Researchers can understand urban space development patterns through element analysis which reveals their sequential growth and visual city effects and social cultural understanding. The urban plan of Tripoli experienced various historical transformations yet the Italian colonial period introduced the most substantial changes through its creation of geometric streets and structured public spaces and building arrangements. The architectural design and spatial organization from this period continue to influence both the visual and cultural aspects of the city. Urban space evaluation requires assessment of physical built environment structures and human social activities because these elements determine urban environments develop their visual and operational characteristics (Al-Mazoughi, 1986). The research focuses on three vital public squares located in Tripoli's historic district which serve as vital elements for shaping the city's visual identity. The design elements of each square derive from the functions and importance of surrounding buildings which serve as spatial anchors. The public spaces serve as community hubs which showcase Tripoli's architectural evolution and its civic identity. The combination of built structures with unoccupied spaces and human activities in these areas generates unique experiences which represent the local cultural heritage.

4.8. Spatial Character of the Squares

4.8.1 The spatial identity of each square is determined primarily by its geometric configuration:

The rectangular design of Martyrs' Square creates a linear formal space which functions as a gathering area. The square's extended design shape supports ceremonial events and processions because it showcases the area's cultural and historical value. The square design of Algeria Square creates a symmetrical urban space that forms a square shape to establish a defined boundary. The square design follows colonial planning

principles which create a structured visual order that organizes the city's layout. The circular design of Ghazala Square enables flexible social interactions because it creates a dynamic space for informal gatherings. The square connects the sea to the urban center through its waterfront location which unites physical spaces with social and cultural activities. The unique spatial designs of these squares demonstrate how architectural elements and public functions and geometric configurations work together to establish Tripoli's urban identity (Figures 36.3 and 37.3). The design elements of each square represent different historical periods which strengthen both community traditions and public pride in the city.

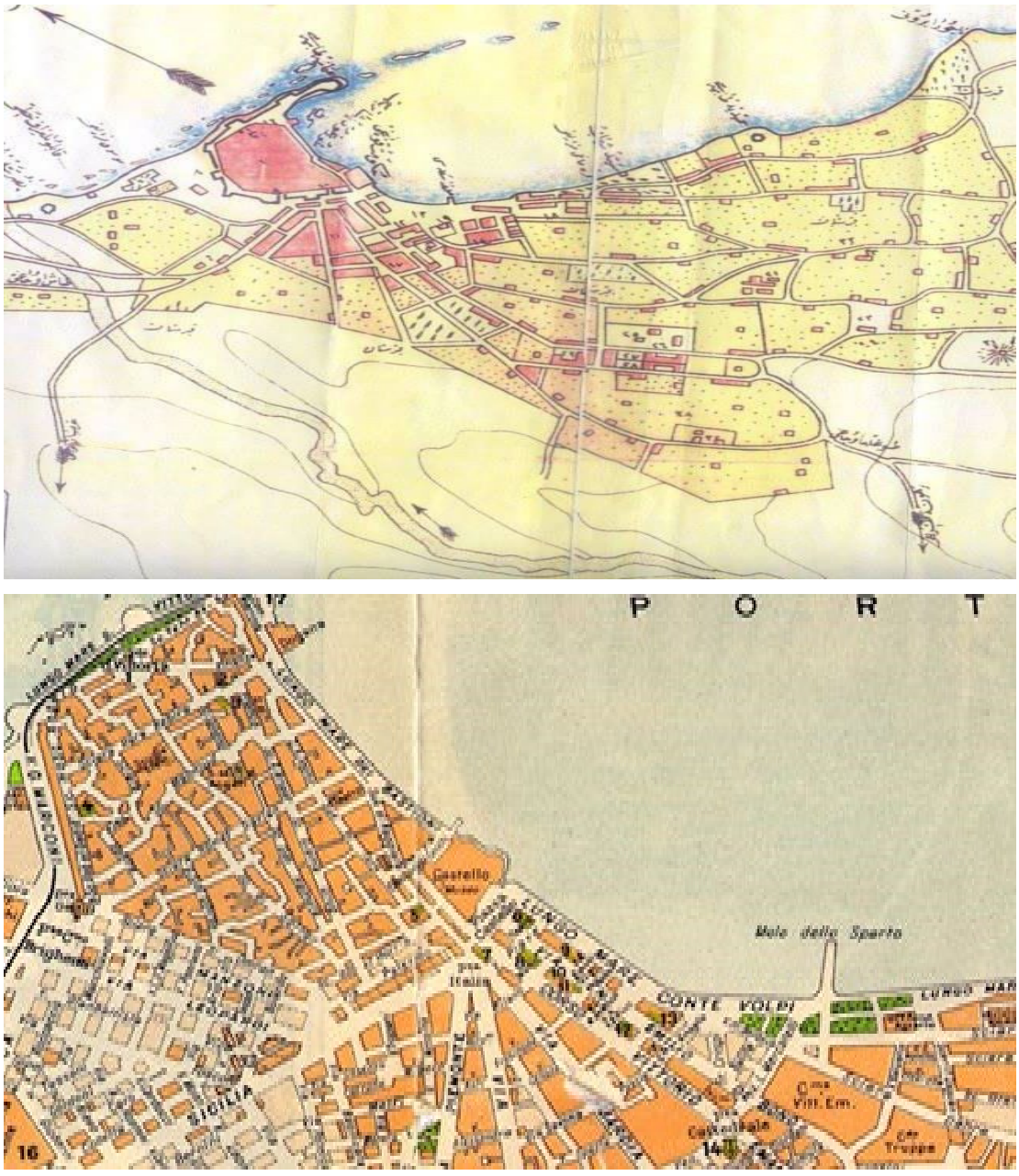


Figure 1.23: illustrates the distinctive character of the squares during the Italian colonial period.

Figure 1.24 illustrates the character of the squares in the post-Italian colonial period within the urban fabric of the city (researcher's work).

4.9 Physical Boundaries and Functional Value of Tripoli's Squares

4.9.1 Physical Boundaries of the Squares

The physical limits of Tripoli's main urban squares emerge from the surrounding constructed areas which both define the open areas and direct city center traffic patterns. The three squares of Martyrs' Square and Algeria Square and Ghazala Square maintain their urban void through continuous building blocks which determine the visual and spatial characteristics of the city. The square boundaries and circulation paths and pedestrian movement patterns receive definition from these surrounding structures which maintain the square's position in the urban structure. The arrangement of building blocks with their enclosed spaces creates a unified visual appearance that makes Tripoli's historic district easy to understand.

4.9.2 Functional Value of the Squares

The functional significance of each square is closely tied to its historical use, social interactions, and the type of activities it supports. These functions are essential in defining the urban identity of each space:

Martyrs' Square historically served as a social and political hub, particularly during the Italian colonial period. It functioned as a ceremonial space and military gathering point, reflecting the civic and administrative power of the city at that time. The square's rectangular configuration facilitated processions, public assemblies, and organized interactions, embedding it as a central node of civic identity.

Algeria Square was designed to emphasize religious and cultural functions, largely influenced by the presence of the Cathedral. This square's square-shaped spatial layout reinforced symmetry and order, highlighting its role as a site for religious activities, communal gatherings, and symbolic representation of colonial cultural values. Its physical and symbolic attributes contributed significantly to the collective memory and cultural identity of the surrounding urban community.

Ghazala Square, located along the seafront, functions primarily as a connector between major urban axes, linking the waterfront with the interior city. Its circular and flexible spatial arrangement accommodates diverse social interactions and pedestrian movement, integrating maritime and urban experiences. This square's role in bridging physical and functional urban networks underlines its contribution to Tripoli's historical and spatial identity.

The historical purpose of each square determines its functional value because it reflects both social activities and the types of activities which take place there. The essential functions of these spaces determine how they shape the urban character of each area:

The Italian colonial period transformed Martyrs' Square into a political and social center which maintained its importance throughout that time. The square operated as a ceremonial area and military assembly point which demonstrated the administrative strength of the city during that era. The square's rectangular design enabled people to move through it while attending public events which made it the heart of civic activities.

The square design of Algeria Square follows a square pattern which creates symmetrical order to showcase its religious and cultural purposes and its location near the Cathedral. The square design with its symmetrical layout served as a venue for religious events and community meetings while displaying colonial cultural values. The physical elements and symbolic meaning of this square area played a vital role in shaping the shared history and cultural heritage of the surrounding urban residents.

4.10 Summary of Findings

The three squares of Tripoli's city center establish the urban image and spatial hierarchy and socio-cultural identity of the historic core through visual surveys and field observations and theoretical analysis. The physical edges of the city create open spaces which function as central points for political and religious and connective activities that establish the squares as fundamental elements of Tripoli's local identity. The squares function as central elements of Tripoli's local identity because they contain historical and cultural significance and civic memories which are embedded in the city's structure.

4.10.1 Martyrs' Square

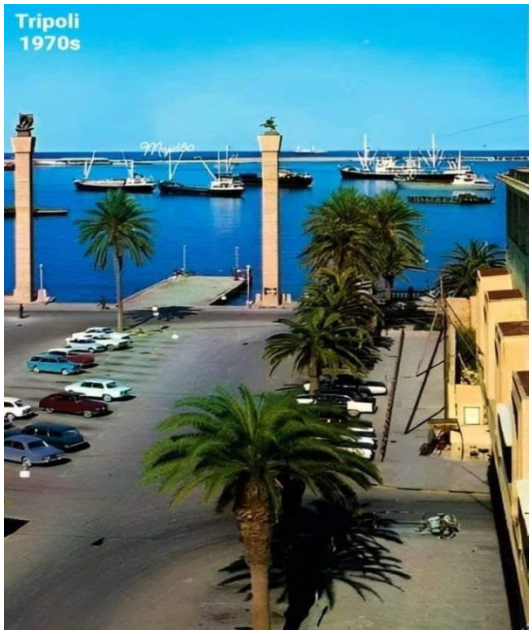
Martyrs' Square stands as a significant historical urban area in Tripoli yet it lacks essential features for public space quality. The space succeeds because it enables social interaction while providing users with historical continuity and emotional benefits. The optimisation of public space potential requires addressing physical connection and functional infrastructure alongside safety measures to create an inclusive public area for residents and visitors. The "Return to Life" plan features the Martyrs' Square Development and Enhancement Project which serves as a major urban development to revitalise this historic monument through infrastructure improvements and social and cultural event promotion. The research approach used extensive data collection and analysis through surveys and field interviews and map analysis and direct observations to guide the design and implementation process and verify the project met local population needs. Three main goals guided the program's development initiative when it began in November 2024. The construction of Martyrs' Square requires the preservation of historical sites. The Department of Antiquities hires professionals to restore historic sites through restoration projects that meet scientific conservation standards. The project includes constructing a dancing fountain to improve urban aesthetics and installing weather-resistant materials that fulfill engineering sustainability requirements for square resurfacing. The project aims to create more attractive and functional public areas for local residents and tourists through lighting improvements and urban furniture restoration and green area development. The project includes improvements to the nearby road network to support transportation and accessibility throughout the region. A memorial monument stands as a tribute to the martyrs who lost their lives in this area thus increasing its historical value and symbolic meaning. The electronic display screen together with informational panels were constructed to display the historical development of the square which strengthens both common memory and its importance in Tripoli's urban identity. The project demonstrates how heritage protection merges with urban development to create a balance between historical preservation and sustainable urban planning. The project demonstrates how planning needs to be tailored to specific contexts through deep understanding of community needs and regional spatial patterns.

4.10.1.a Physical Boundaries and Urban Morphology:

The urban space of Martyrs' Square receives its physical boundaries from three sides of surrounding buildings which create a rectangular void. The waterfront serves as the square's boundary on its fourth side which creates both visual and operational links to the seafront area. The Italian colonial era saw the square become surrounded by multiple public facilities and administrative buildings which included the Miramar building together with other important structures. The post-colonial period brought destruction to essential buildings which included the former Ministry building and the Miramar building and residential properties because of time-related deterioration and urban development. The square maintains its role as a main public area because it upholds its original purpose as a social and civic hub.

4.10.1.b Functional and Cultural Identity

Martyrs' Square operated as a political and social center throughout colonial times because it hosted military parades and public events. The square's designed shape enabled people to gather in an orderly fashion which made it a significant part of the city's shared historical experience. The square preserves its original design which upholds its historical value while upholding local heritage despite losing its original architectural features. The evolution and visual characteristics of the square are discernible through the illustrations, which capture the contemporary state of each distinct section. Each figure highlights specific elements, revealing how architectural features, spatial organisation, and urban design components collectively reflect the square's present identity.



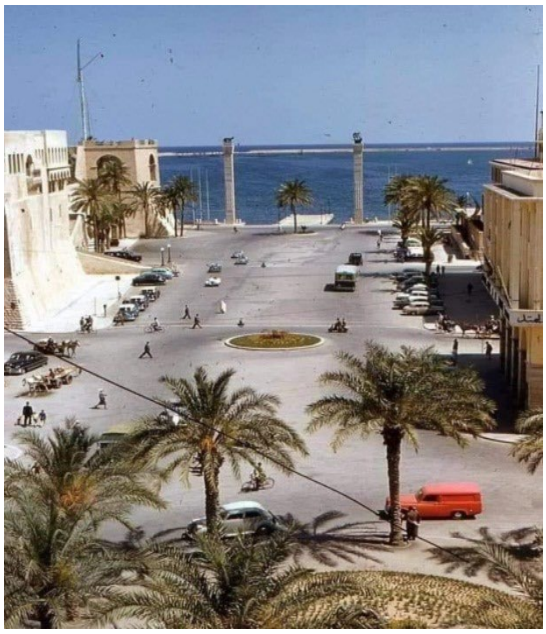


Figure 1.25 illustrates the spatial configuration of the square, its physical boundaries, and its functional significance, based on a map from Google Earth.

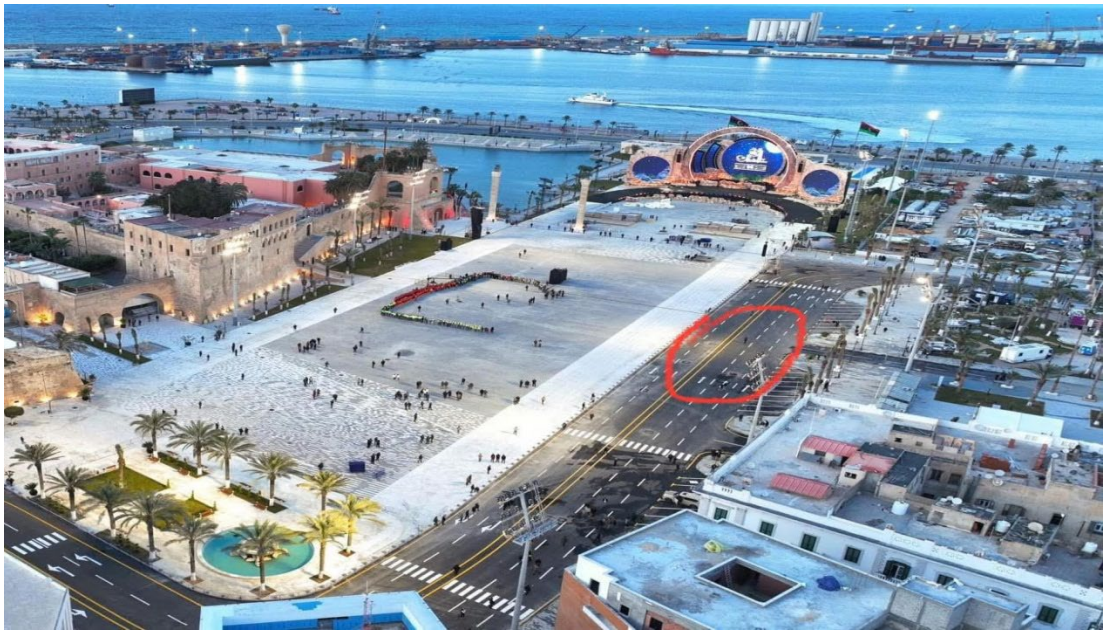


Figure 1.26 shows the current view of the square, bordered by the Red Castle and the Al-Mushir Market on the western side (photographed by the researcher.

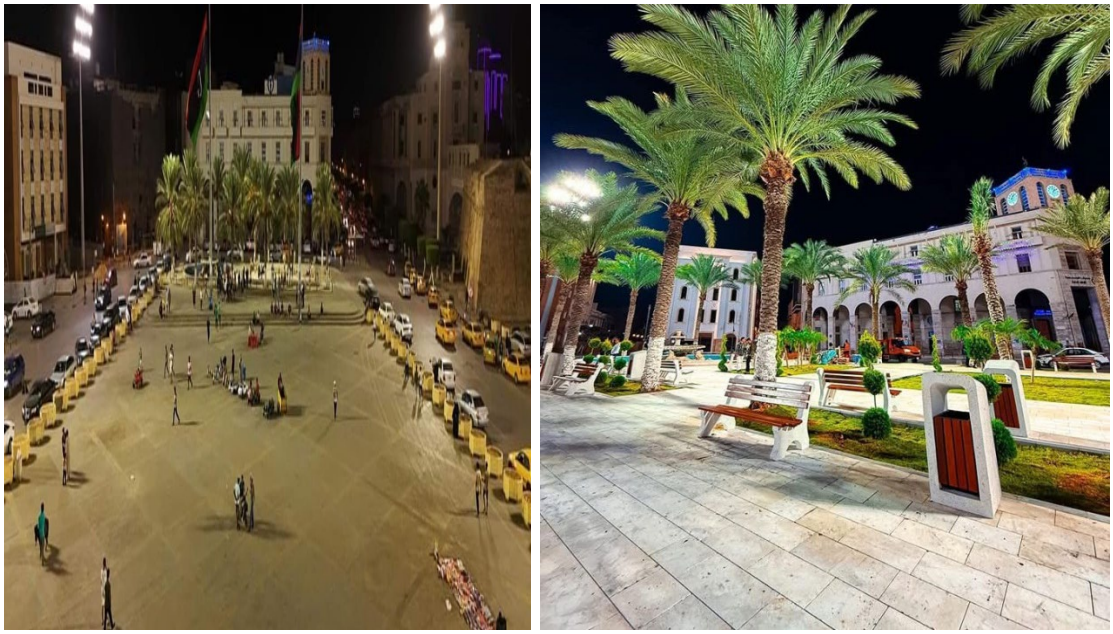


Figure 1.27 illustrates Martyrs' Square, currently bordered by the Republic Avenue to the south and the sea to the north (photographed by the researcher).

4.10.2 Algeria Square

4.10.2.a Physical Boundaries and Morphology:

The urban space of Algeria Square forms a square shape which public buildings enclose to determine both its dimensions and its intended use. The Islamic Da'wah Mosque stands as the main identifying feature of the square because it originated from the former Cathedral which now functions as a religious and cultural centre. The Italian colonial era established the square through its construction of two essential buildings which were the Tripoli Municipality and the central post office. The historical buildings from the Italian colonial era continue to exist in their original state which supports the ongoing development of the city's urban structure. The images from Figures 44.3–47.3 show the square's geometric shape and its limits and surrounding architectural features.

4.10.2.b Functional and Cultural Identity

The Algerian Square has maintained its religious and cultural significance throughout history through its cathedral/mosque which serves as a symbolic centre. The square design creates a sense of order through its symmetrical layout which makes the area easy to understand and maintains the overall structure of the surrounding city. The square maintains its role as a gathering place for social events and religious ceremonies because it continues to shape both local identity and urban historical memory.

Figure 1.28 highlights the key buildings surrounding the square that define its character (Mondadori, 1937, p. 131).

Figure 1.29 shows Algeria Square's square geometric form embedded in the urban fabric of central Tripoli, as observed on Google Earth.

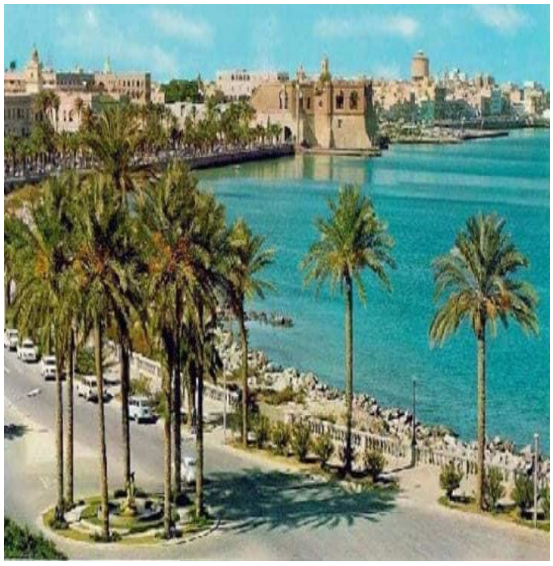
4.10.3 Ghazala Square (Maidan al-Ghazala)

4.10.3.a Physical Boundaries and Morphology:

The circular design of Ghazala Square enables free movement in all directions while uniting different urban pathways across Tripoli's central district. The square used to reach the seafront directly which made it a visual and spatial link between the city and the Mediterranean coastline. The Italian colonial period led to the filling of waterfront sections which cut off the square's direct access to the sea. The square functions as a vital pedestrian hub which connects multiple streets and public areas across the city. The original and modified versions of the square appear in Figures 48.3–52.3.

Functional and Cultural Identity:

The circular design of Ghazala Square enables active social engagement through its adaptable area which supports both official events and spontaneous community activities. The square maintains its historical significance because it stands at the intersection of waterfront access and urban pathways which define Tripoli's local identity through its connection between maritime history and city planning. The modifications made to Ghazala Square have not altered its ability to showcase the combination of historical heritage and urban purpose and visual accessibility that defines the city centre.



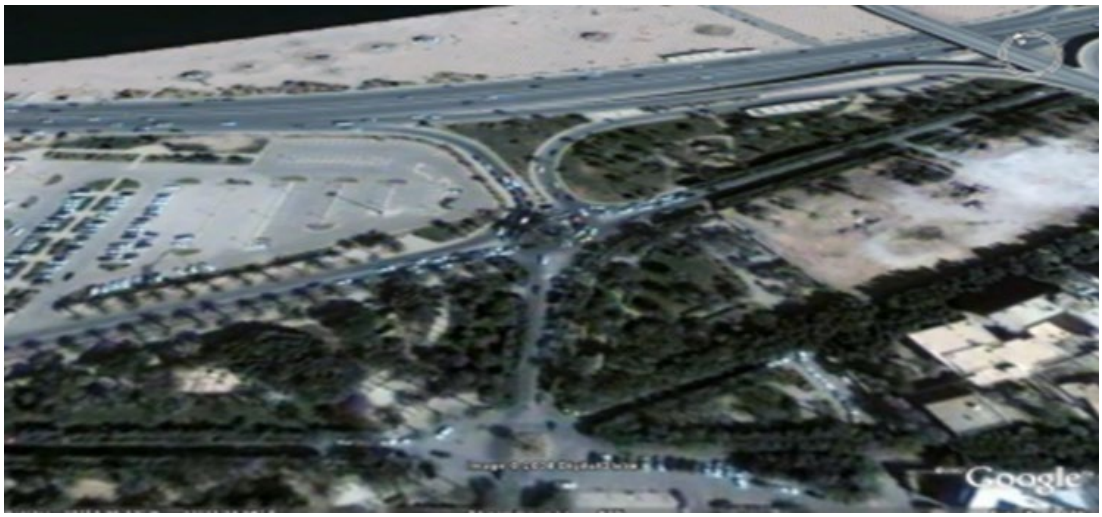


Figure 50.3. Contemporary aerial perspective of Ghazala Square, illustrating its present configuration within the urban fabric (source: Google Earth)

Figure 51.3: Directional flow of movement within the square, observed from the north (photographed by the researcher, 2025)

Figure (52.3) illustrates the square's local identity and character at the time

it was photographed by the researcher in 2025.

5.1 Analysis of Urban Fabric Patterns in the City Centre of Tripoli

The urban fabric emerges from environmental and social and economic elements which create physical and cultural characteristics of cities. The environmental and social and economic elements of Tripoli have established its local identity through various historical stages. The social patterns and community patterns in Tripoli have molded the city layout and operational design which resulted in three distinct urban types: traditional and semi-urban and fully urban. The urban area of Tripoli consists of multiple connected urban sections which include residential areas and spatial districts and neighborhood clusters. The inhabitants of each area have developed distinct identities through their collective experiences and cultural traditions and historical events. The city's overall form achieves its strength through the successful integration of its individual units which make up the urban structure.

5.1.1 Classification of Urban Fabric Patterns in Tripoli

Tripoli's urban fabric contains a combination of spatial patterns that reflect the layered evolution of the city. These patterns represent a synthesis of historical continuity and contemporary transformation, shaped by geographical conditions, cultural traditions, colonial interventions, and postcolonial urban development. The primary urban fabric types can be classified into the following categories.

5.1.1.a Traditional Spontaneous Historical Fabric

The Ottoman-era Old City contains most of this type which displays its dense compactness and organic development pattern. The fabric consists of tight alleys and irregular land plots and dense construction which follows traditional community planning instead of contemporary urban design standards. The pattern maintains its cultural value and historical significance but struggles to meet modern urban needs which creates problems with infrastructure and functionality.

5.1.1.b Colonial-era Planned Fabric

The historic core borders this pattern which developed during the Italian colonial era when authorities started creating controlled street systems and uniform building structures. The areas show better spatial arrangement and wider streets and improved infrastructure alignment which results in stable urban environments during the current time. The areas maintain their distinct character because colonial

planners imposed their design principles which local residents adapted through their social and cultural practices.

5.1.1.c Post-Colonial Urban Expansion and Transformation

The post-colonial period brought substantial growth to Tripoli's city center through new development phases which merged with its historical urban structure. The city underwent changes through new administrative and commercial and residential areas which transformed its spatial organization and movement systems. The development process demonstrates how heritage protection interacts with contemporary urban requirements while local identity finds expression through public space design.

6.1 Analysis of Urban Fabric Patterns in the City Centre of Tripoli

Public squares in Tripoli show distinct patterns based on different urban fabric types because these areas reflect how the city evolved its social character and spatial customs. The Old City's traditional spontaneous fabric contains public squares which exist as integrated community areas because they develop through social bonds and regular human contact. The squares maintain small dimensions while they naturally appear at pedestrian walkway junctions which strengthens their connection to traditional community values and family ties and neighborhood social bonds. The colonial-era planned fabric contains public squares which demonstrate how state control transformed urban spaces into formalized areas of representation. The design of these spaces uses geometric patterns and visible architectural elements to display political power and modern civic values. The spaces create organized areas for public events through their design yet their meaning develops from the struggle between colonial-designed spaces and local cultural practices which produce unique social uses and spatial meanings. Public squares in post-colonial expansion areas demonstrate how modernization efforts create conflicts with traditional cultural practices. The urban development plans include these areas to enhance transportation systems and commercial access and administrative operations. The success of these spaces to create genuine local identity depends on their ability to enable social inclusion and support various cultural activities while maintaining accessibility for regular users instead of becoming mere urban monuments. The different urban fabric types in Tripoli show how public squares develop local identity through continuous social exchanges between past traditions and present-day transformations. The public squares in Tripoli function as dual elements which show both the existing cultural heritage and the evolving social dynamics of the city through their design and usage patterns.

6.2 Spatial Connectivity Analysis of the Case Study Area

The spatial connectivity of Tripoli's city centre can be understood through the network of public spaces and movement corridors that link its major urban nodes. Spatial connections are shaped by axes of circulation and visual permeability, which reinforce the symbolic and functional identity of key public squares. In this context, Martyrs' Square, Ghazala Square, and Algeria Square constitute critical points of attraction, forming a system of interconnected urban voids that structure both movement patterns and collective urban experience within the broader fabric of the city centre. The historical and architectural evolution of Tripoli has played a decisive role in shaping these spatial relationships. The city's traditional built environment, characterised by dense organic forms and community-based spatial logic, contrasts sharply with the colonial interventions introduced during the Italian occupation, which imposed more formalised street alignments and centralised visual axes. This intersection of local cultural identity and externally driven spatial reconfiguration has resulted in a layered urban structure where public squares operate simultaneously as cultural anchors, political symbols, and mobility nodes.

The current spatial configuration of Tripoli's city centre reveals a system of radial and concentric axes, converging at Martyrs' Square, which acts as the principal spatial core and reference point for orientation,

movement, and public life. The radial axes extend outward to secondary squares and surrounding districts, while the intersections of these primary and secondary routes create circular or semi-circular spatial relationships, reinforcing continuity and visibility across the urban landscape. This radial organisation highlights the role of Martyrs' Square not merely as a central landmark, but as a spatial, social, and symbolic nucleus that anchors the identity of the city. Through this configuration, public squares in Tripoli become expressive containers of memory and identity, mediating between traditional spatial values and contemporary urban flows. The spatial connectivity patterns illustrated in Figures (81.3), (82.3), (83.3), and (834.3) demonstrate how movement networks shape the perceptual and functional relationships among the squares, consolidating their role as shared cultural arenas where everyday life, civic rituals, and collective identity intersect.

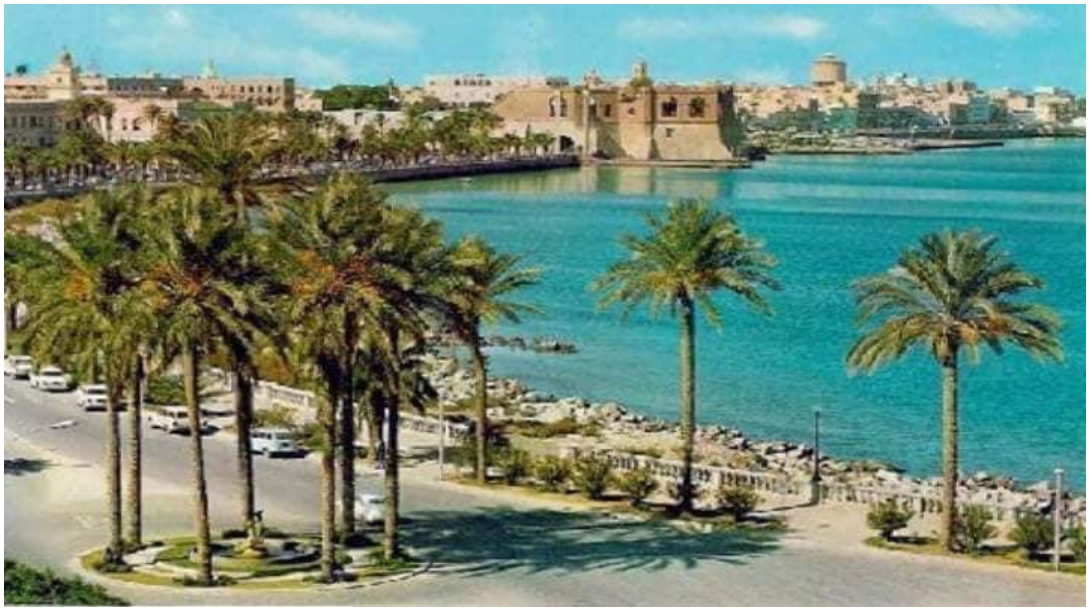


Figure 82.3. The connection between Ghazala Square and Martyrs' Square. (Awaj, 2025)

Figure 83.3. Visual connectivity between Algeria Square and Ghazala Square, highlighting *intervisibility and axial alignment*

7.1. Discussion: The Role of Urban Squares in Shaping the Visual and Spatial Identity of Tripoli's City Centre

The research shows that Martyrs' Square, Algeria Square and Ghazala Square serve as essential elements which establish the visual and spatial character of Tripoli's central business district. The physical layout of these squares together with their architectural features and cultural significance work to create a unified city image that exists in both physical space and community memory. The city's waterfront position and its radial urban design system determines how these public spaces connect to each other. The radial design structure makes the city center function as the main gathering spot for all social and political and cultural events. The urban landscape receives its visual identity from three architectural landmarks which include the Red Castle near Martyrs' Square and the former Cathedral of Tripoli in Algeria Square and the historic post office and Aurora building near Ghazala Square.

7.1.1 Martyrs' Square

Martyrs' Square represents the primary spatial and symbolic nucleus of Tripoli. Its rectangular form, open visual field, and strong axial connections to adjacent districts make it the focal point for civic gathering, public demonstrations, and cultural events. The proximity of the Red Castle (As-Saraya Al-Hamra) reinforces the square's historical and national identity, as the castle embodies centuries of cultural layering and collective memory. The square's openness and scale reflect a deliberate effort to project national unity and shared public identity, making it a central point of reference within the city's spatial hierarchy.

7.1.2 Algeria Square

The square design of Algeria Square maintains a dual identity through its square shape which presents an opposing yet harmonious character. The square area contains the former Cathedral building which represents a historical process of colonial architectural forced placement followed by local cultural transformation. The square maintains civic order through its balanced design and contained space which creates visual stability. The square identity emerges from the interaction between foreign planning systems and local cultural reinterpretation which produces a unique urban character that showcases Tripoli's multifaceted historical growth.

7.1.3. Ghazala Square

The city center's spatial network includes Ghazala Square as its connector node. The historic post office and Aurora building surrounding the square establish its identity as a space that connects to institutional presence and administrative interaction. The square functions as a visual connection between Martyrs' Square and Algeria Square through its structural design which creates a continuous pathway across the city center. The square derives its identity from its role in facilitating daily urban activities through functional circulation rather than standing as a monumental structure.

8. CONCLUSION

The public squares of Tripoli function as cultural landscapes which actively create and transform the city's local identity through continuous production and negotiation and expression. The city's socio-political development stages find expression through unique spatial arrangements and architectural elements and symbolic values which exist in each public square. The squares function as active historical records because people use them daily while their visual elements and shared memories show how heritage endures through time while cities transform. The research shows that Martyrs' Square and Algeria Square and Ghazala Square design elements and spatial connections and architectural boundaries create more than traffic flow because they influence how residents experience and emotionally connect with the city center. The city center of Tripoli maintains its identity through the combination of constructed environments and personal experiences which create a unified sense of community. The stability of this identity faces threats because modernization efforts and political transformations and irregular urban development practices create instability. The implementation of planning strategies that focus on vehicle traffic and commercial development and external design elements threatens to destroy the heritage-based identity and social bonds which make these public spaces special. The local identity of Tripoli's city center needs heritage-sensitive and community-driven and context-responsive urban development frameworks to survive. The preservation of local identity needs three essential elements. The design process for public spaces needs active participation from local residents and cultural experts and institutional representatives who will also maintain these areas. The preservation of symbolic landmarks together with human-scale architectural elements should maintain visual and spatial connections between different areas. The public spaces need to maintain their accessibility and safety while showing the diversity of local cultural activities. Public squares function as cultural infrastructure instead of serving as traffic routes or empty urban areas. The transformation of Tripoli's public squares into active civic spaces will revive their function as cultural landmarks which showcase national heritage and community spirit and shared heritage. The city center transforms into a symbolic heart which unites people with their environment through a continuous process of heritage preservation and progressive development.

The research results show that Tripoli's historic city-centre squares determine public urban activities through activities which deeply reflect Libyan cultural traditions. The various daily activities which follow Tripoli's spatial design and local customs maintain the lively social atmosphere of these public spaces. The squares maintain their symbolic importance because they have served as national celebration sites and traditional festival locations and civic event venues for many years. The combination of cultural facilities with heritage-inspired artistic programs makes these spaces more appealing to local residents and tourists which strengthens their role as social hubs and cultural centers. The squares maintain their importance for the city's economic and social development and cultural heritage despite modern urban development challenges. The research establishes that historic squares in Tripoli function as vital cultural pathways through the city so they need protection as fundamental parts of Libyan urban heritage. The study provides new knowledge about historic city-centre squares in Tripoli through its analysis of their local spatial, social, and cultural elements, which maintain urban public activities. The research uses Libyan-specific data to validate previous studies about North African public squares while showing how Tripolitan squares achieve

multifunctionality through their distinct local characteristics and spatial design and community traditions. The research establishes historic squares as essential urban areas which function as main public spaces and welcoming public forums and artistic hubs for local cultural events and as vital cultural sites that reflect Libya's multiple historical periods. Their worth exceeds their physical structure.

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REACTIVATING THE MODERN IDEAL: CASA BLOC AND THE SOCIAL REUSE OF MODERNIST HERITAGE

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ABSTRACT

This study examines the transformation of Barcelona's Casa Bloc between 1932 and 2021, tracing the building's evolution from a modernist social housing prototype to a contemporary infrastructure for social support. Designed by GATCPAC during the reformist climate of the Spanish Second Republic, Casa Bloc embodied the group's rationalist experimentation with residential typologies, climate-responsive spatial strategies, and a programmatic emphasis on collective life. Within the Mediterranean context, it became one of the most significant manifestations of early modernist attempts to align architectural form with social progress. However, the outbreak of the Spanish Civil War and the subsequent Franco dictatorship fundamentally altered the building's trajectory. Under military ownership, collective spaces were closed, programmatic components were dismantled, and the complex was converted into army housing, distancing it substantially from its original social and architectural vision. The democratic transition after 1975 enabled a gradual revaluation of Casa Bloc as part of Spain's modern architectural heritage. Extensive restoration projects initiated in the 1990s reinstated the building's key spatial principles—light, ventilation, permeability, and communal circulation—thus recovering essential qualities of its original design. The opening of Apartment 1/11 as a museum-dwelling in 2010 further reframed Casa Bloc not only as a preserved architectural artifact but also as a didactic vehicle through which the social ambitions of the early modern movement could be reinterpreted for contemporary audiences. The second focus of this study is the Llar Casa Bloc project (2016–2021), developed through a collaboration between the Catalan Housing Agency and the Habitat3 Foundation. This initiative converted two previously unused floors of the building into supported housing units for individuals at risk of social exclusion. The rehabilitation process incorporated technical improvements aimed at energy efficiency, accessibility, and digital inclusion, while also integrating individualized support programs delivered by social care organizations. In this sense, Llar Casa Bloc constitutes one of the most innovative applications of Habitat3's "Viviendas para las Entidades Sociales" model—recognized with the 2019 World Habitat Award—within the specific context of modern architectural heritage. The transformation of Casa Bloc demonstrates how modernist principles can be re-engaged within contemporary debates on the right to housing, social inclusion, and care-based policy frameworks. The building's layered history and its current social role illustrate the capacity of architectural heritage to adapt to evolving societal needs, offering a dynamic resource rather than a static monument. Casa Bloc thus stands as a compelling example of how modernist ideals can be reactivated and re-embedded within present-day urban and social conditions.

KEYWORDS: Casa Bloc, GATCPAC, modernism, social housing, adaptive reuse, collective memory, social inclusion

1. INTRODUCTION

The first half of the twentieth century marks a critical period in which social housing in Europe ceased to be understood merely as a physical solution to shelter and instead became one of the principal instruments for social transformation. Accelerated industrialization, the expansion of the working class, unhealthy living conditions in overcrowded cities, and rising inequality compelled modern architecture to redefine the "minimum conditions for life" (Existenzminimum). In this context, the principles formulated in the early CIAM congresses (CIAM II–IV, 1929–1933)—rational planning, hygienic dwellings, functional zoning, and collective services—reshaped housing policies across Europe. Yet these principles were not applied uniformly; rather, they were translated through local geography, climate, culture, and socio-political conditions, producing divergent paths to modernity (CIAM, 1933; Díez-Pastor Iribas, 2003; Lejeune, 2015).

In Spain, these international debates intersected with the complex and fragile national trajectory of social housing. From nineteenth-century industrial colonies and early philanthropic housing initiatives, to the Casas Baratas legislation and the establishment of the National Housing Institute (Instituto Nacional de la Vivienda – INV), and further to the Franco-era colonization villages and the subsidized housing schemes of the late twentieth century, social housing became an arena where architectural experimentation and state policy converged—often with limited success in alleviating the structural housing deficit (Hernández Falagán & Rosselló Nicolau, 2024; Sambricio Echegaray, 2020). Within this long history, the Second Republic (1931–1939) stands out as a brief yet intense period during which progressive models of social housing—closely aligned with European avant-gardes and strongly oriented toward workers' welfare—emerged.

Casa Bloc in Barcelona (1932–1936) is one of the most emblematic expressions of these plural modernizing processes within the Mediterranean context. Designed by the Catalan branch of GATEPAC, GATCPAC—led by Josep Lluís Sert, Josep Torres Clavé, and Joan Baptista Subirana—the complex combined the typological innovations of rationalist modernism with the vernacular spatial logics, social life patterns, and climatic conditions of the Mediterranean, producing both an architectural and a social manifesto. As the spatial embodiment of the Second Republic's social reform agenda, Casa Bloc demonstrated that healthy and equitable living was not merely a technical problem but also a political ideal. It was simultaneously a modernist manifesto and a social project, materializing the Republic's conviction that workers' housing constituted part of a broader democratic, healthy, and egalitarian vision of life (Sert, 1942; Lejeune, 2015; Topçu, 2018) (Figure 1).

Figure 1. A historic general view of Casa Bloc, one of Spain's first modern social housing complexes.

(Source: https://zumzeigcine.coop/es/cine/films/casa-bloc/)

This modernist ideal was radically interrupted by the outbreak of the Spanish Civil War and the subsequent Franco dictatorship. The building's conversion into military housing, the closure of its collective spaces, and the dismantling of its original social program transformed Casa Bloc from a modernist utopia into a space of control-oriented habitation (Casanova, 2012). During Francoism, social housing policies shifted toward paternalistic, hierarchical, and speculative frameworks; early Republican experiments were either marginalized or ideologically neutralized (Hernández Falagán & Rosselló Nicolau, 2024; Sambricio Echegaray, 2020).

The democratic transition made it possible to re-read modernist settlements as heritage—not merely as aesthetic artifacts to be preserved, but also as material infrastructures capable of supporting new social agendas. The long restoration process of Casa Bloc and the 2010 opening of Apartment 1/11 as a museum-dwelling exemplify a shift from an approach focused solely on conservation toward one that interprets modernist heritage as a critical and didactic resource (DHUB, 2011; Casanova, 2012; Topçu, 2018).

The Llar Casa Bloc project, developed after 2016, demonstrates that Casa Bloc's historical social function can be reactivated in line with contemporary policies on care, inclusion, and the right to housing. The conversion of part of the complex into supported housing for vulnerable groups shows how GATCPAC's modernist principles can be reinterpreted within current social needs. This transformation gained further visibility through the international recognition of Habitat3's "Viviendas para las Entidades Sociales" program, which received the 2019 World Habitat Award, positioning Llar Casa Bloc as one of the most innovative applications of this award-winning model within the framework of modern architectural heritage (INCASÒL, 2017; World Habitat, 2019).

This article aims to trace the transformation of Casa Bloc between 1932 and 2021, revealing the building's evolution from a modernist social housing prototype into contemporary models of socially oriented use. In evaluating this trajectory, the study considers the early Republican context in which the building was designed, the transformations it underwent during the years of war and dictatorship, its renewed visibility following the democratic transition, and its relationship with current social housing policies. The primary objective of the study is to examine the spatial and social functions that Casa Bloc assumed in different periods from a comparative perspective and to demonstrate how modernist principles have been reinterpreted within contemporary models of social care and inclusion. In this regard, the article shows that architectural heritage can be understood as a dynamic resource capable of adapting to changing social needs.

2. HISTORICAL CONTEXT: CIAM, GATCPAC AND THE MODERN HOUSING QUESTION

In the first half of the twentieth century, the housing crisis in European cities was reconceptualized through the lens of modern architecture. Between 1928 and 1933, the CIAM congresses introduced a set of "minimum dwelling" (Wohnung für das Existenzminimum) principles that mobilized the potentials of industrialization and standardization to produce hygienic, accessible, and functionally efficient housing. The discussions at CIAM II (Frankfurt, 1929) and CIAM IV (Athens, 1933) emphasized the need for cross-ventilation, optimal solar orientation, minimum room sizes, standardized service cores, and the design of housing blocks not as isolated buildings but as "urban units" integrated with collective services and green spaces (CIAM, 1933; Díez-Pastor Iribas, 2003).

Le Corbusier's late-1920s writings—such as *Une maison, un palais* (1929) —together with the experimental housing projects in Frankfurt, Berlin, and Vienna, provided powerful references for Spanish architects confronted with severe housing shortages and uneven industrialization (Le Corbusier, 1929; Hernández Falagán & Rosselló Nicolau, 2024). Fernando García Mercadal's work on the "minimum house" and the *Concurso de la Vivienda Mínima* competition he organized in 1929 facilitated the dissemination of these models in Spain and encouraged young architects to conceive the housing typology as a field of social experimentation (Díez-Pastor Iribas, 2003).

At the same time, Spanish housing policy followed an original and at times contradictory trajectory. In the nineteenth century, particularly in mining areas and industrial belts, company towns, philanthropic housing, and early cooperative initiatives emerged to accommodate workers living in precarious conditions. The *Casas Baratas* laws (1908, 1911, 1921) sought to support low-cost housing production through tax incentives and controlled rent regimes; however, their impact remained limited due to speculative land markets and the restricted institutional capacity of municipalities (Hernández Falagán & Rosselló Nicolau, 2024).

During the Second Republic, new experiments sought to align architectural modernization with progressive social reform. Projects such as Rafael Bergamín's *El Viso* development in Madrid, Secundino Zuazo's *Casa de las Flores*, and *Casa Bloc* in Barcelona emerged as emblematic prototypes that combined rationalist geometry, functional plan layouts, and modern construction techniques with concerns for social welfare and urban form (Lejeune, 2015). As Hernández Falagán and Rosselló Nicolau (2024) note, although these projects did not quantitatively resolve the housing crisis, they provided a repertoire of typologies and management models that would be reinterpreted repeatedly over subsequent decades.

Within this international and national framework, GATCPAC—established in 1930 as the Catalan branch of GATEPAC—played a central role in redefining the relationship between modern architecture, social reform, and Mediterranean urban life (Rovira & Pizza, 2006). Under the leadership of Sert, Torres Clavé, and Subirana, the group believed that architecture could serve as a key lever for transforming everyday life, working in close collaboration with the Catalan Government (Generalitat de Catalunya) and the Barcelona City Council. The journal *A.C. Documentos de Actividad Contemporánea* (1931–1937) disseminated debates on minimum housing, urban planning, cinema, photography, and graphic design, functioning as a platform that connected local discussions with CIAM and CIRPAC networks (A.C., 1931–1937; Casanova, 2012).

GATCPAC's modernism differentiated itself from the stricter Northern European functionalism by grounding its architectural vocabulary in Mediterranean traditions. During their trips to southern Spain and Ibiza, Sert and Germán Rodríguez Arias documented whitewashed cubic volumes, terraces, courtyards, galleries, and shading devices, interpreting them as spatial archetypes capable of informing a climatically responsive and socially vibrant modern architecture (Lejeune, 2015). As Topçu (2018) emphasizes, the group argued that modernity and tradition were not mutually exclusive; rather, rational construction and standardization could coexist with local ways of life in a synthesized architectural language.

This synthesis became fully legible in the 1932 *Plan Macià* for Barcelona, developed in collaboration with Le Corbusier. The plan critically re-evaluated Cerdà's Eixample and proposed 400 × 400-meter superblocks designed to densify the city while improving solar access, cross-ventilation, and access to collective green spaces; it explicitly rejected uncontrolled suburban sprawl and garden city models (Lejeune, 2015). At the same time, GATCPAC opposed Haussmann-style tabula rasa demolitions in the historic center, advocating instead for the preservation of historic monuments within their urban and social contexts and formulating an approach of "careful clearance" (A.C., 1931–1937; Lejeune, 2015).

Casa Bloc was conceived as the experimental housing prototype of this broader metropolitan vision. By synthesizing CIAM principles, GATCPAC's interpretation of Mediterranean modernity, and the social agenda of the Second Republic within a single architectural complex, the project serves as a key example for understanding how international modernism was translated into the specific socio-political and urban context of Barcelona.

3. CASA BLOC: A MODERNİST MANİFESTO AND ITS TRANSFORMATIONS (1932–2010)

Constructed between 1932 and 1936 in the Sant Andreu district, Casa Bloc is widely regarded as one of the most distinctive expressions of modern social housing in the Mediterranean context. Commissioned by the Catalan Government (Generalitat de Catalunya) to provide better living conditions for industrial workers

employed in the surrounding area, the project aimed to offer low-income families healthy, well-ventilated, sunlit, and socially supportive dwellings (Topçu, 2018; Casanova, 2012; Lejeune, 2015).

Architecturally, the complex is organized around a curvilinear "S-shaped" block occupying a parcel of 170 m × 53–70 m. Inspired by Le Corbusier's redent typology, this configuration reinterprets the logic of the linear block through an open, courtyard-based layout adapted to Barcelona's climate (Casanova, 2012; Lejeune, 2015). Five linear wings are connected by stair and elevator cores, generating two large semi-open courtyards that supply light and air to the dwellings (Figure 2). Pilotis lift the structure above ground level, producing a permeable ground plane for circulation and collective activities, while the external galleries positioned every two floors provide access to the duplex units and enhance cross-ventilation (A.C., 1931–1937; Casanova, 2012).

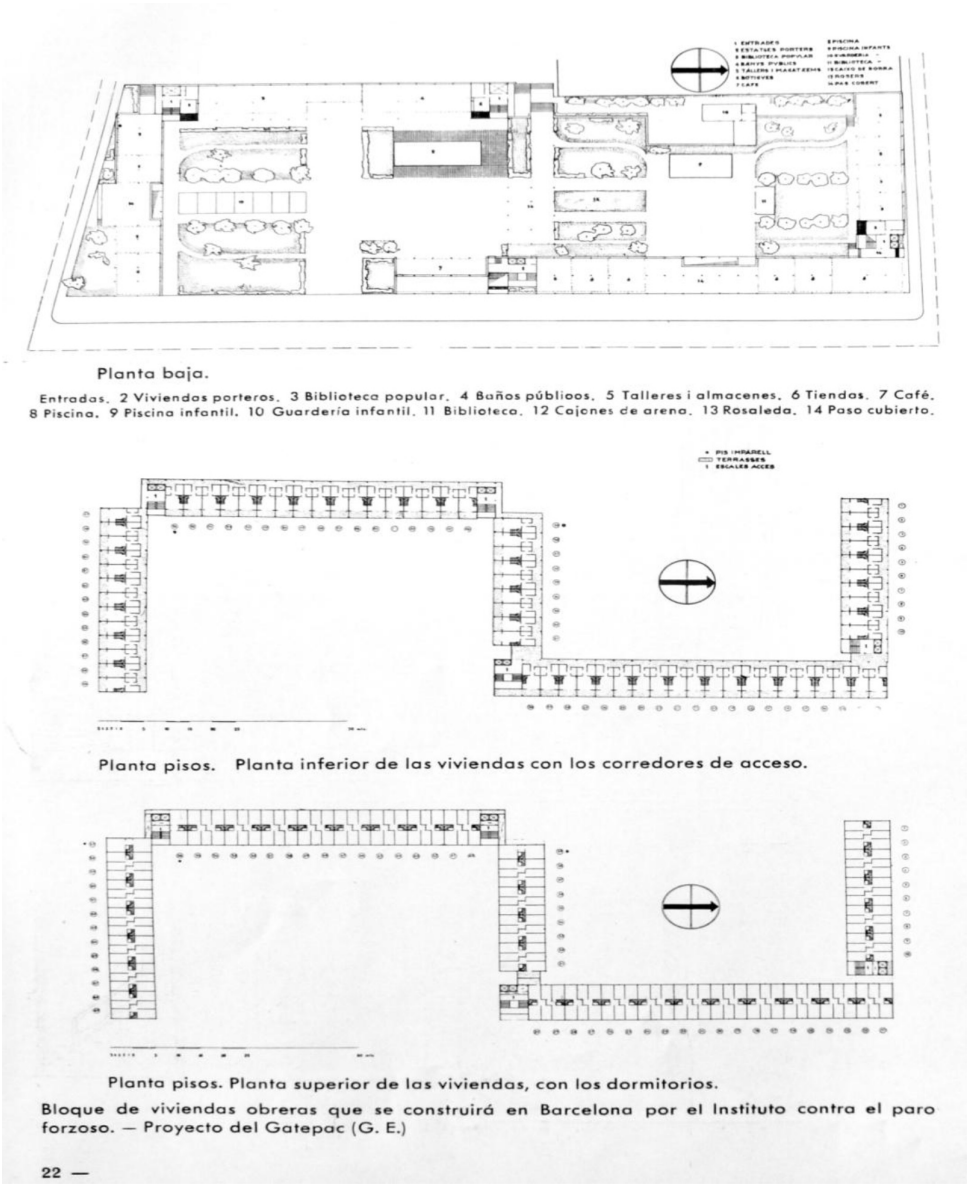

Figure 2. Plans of Casa Bloc, Barcelona (1932–36), by Josep Torres Clavé, José Luis Sert and Joan Baptista Subirana (Source: Lejeune, 2015)

Each dwelling is a compact duplex of approximately 60–70 m^2, comprising a living-dining area, kitchen, laundry niche, and balcony on the lower level, and two or three bedrooms on the upper level. The 4-meter

structural grid is directly reflected in the internal layout; the displacement of upper-floor partitions relative to the lower grid enabled the architects to create three generously sized bedrooms within a constrained footprint (Sert, 1942; Casanova, 2012). Service spaces—kitchens, laundry niches, and bathrooms—face the access gallery, while living spaces and terraces open toward the courtyard or the street, ensuring that all principal rooms receive light and fresh air (Figure 3). As Sert later emphasized in Can Our Cities Survive?, this scheme achieves high density (approximately 1,140 inhabitants/ha) while maintaining excellent environmental conditions and collective amenities, thereby redefining the relationship between density, health, and urban liveability (Sert, 1942; Lejeune, 2015).

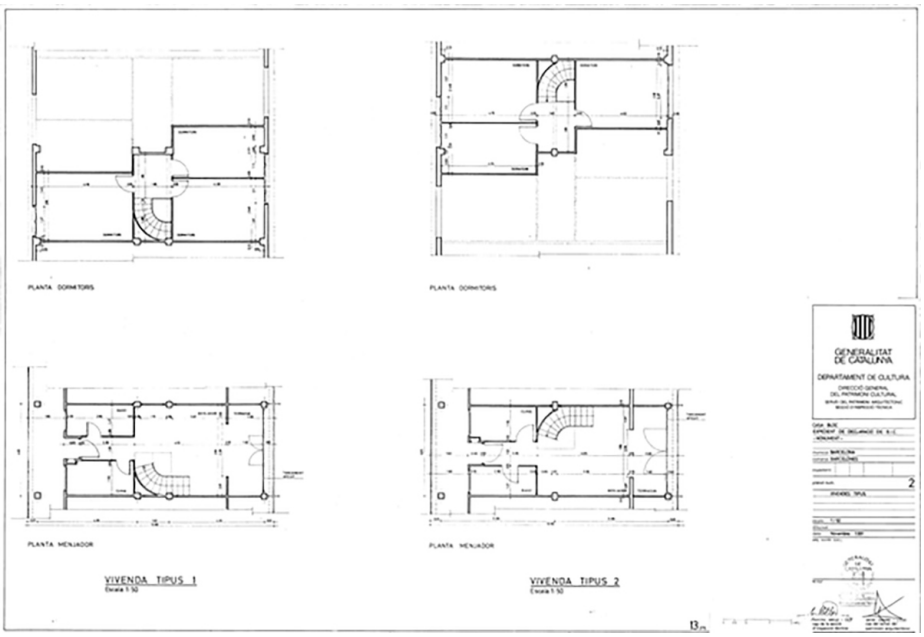

Figure 3. Original floor plans of Casa Bloc housing units (Type 1 and Type 2)

(Source: https://criticalista.com/2016/03/25/revisiting-casa-bloc/)

Programmatically, Casa Bloc was conceived not merely as a housing block but as a small-scale "neighbourhood unit." Drawings published in A.C. and later analysed by Casanova (2012) and Topçu (2018) reveal proposals for a cooperative shop, library, public baths, workshops, storage areas, retail spaces, a café, two swimming pools—two of them dedicated to children—and a nursery on the ground floor, complemented by a nearby municipal school. In this sense, the project reinterprets the mixed-use logic of traditional Barcelona blocks through a modern vocabulary of pilotis, galleries, and standardized units, giving spatial form to GATCPAC's understanding of architecture as an instrument of social progress and collective welfare.

The outbreak of the Civil War abruptly halted construction just as the complex was nearing completion. Following the Republic's defeat, the Franco regime dissolved the Generalitat and transferred Casa Bloc to the armed forces in 1940. The complex was assigned to soldiers and their families and progressively transformed to suit an entirely different political and social agenda (Casanova, 2012; Topçu, 2018). Internal corridors were enclosed, some apartments were merged into larger units for officers, and parts of the ground floor and courtyards were filled with new structures. The Bloc fantasma ("ghost block"), added in 1948 and entirely closing off one of the courtyards, eliminated the original spatial openness. Thus, the "minimal yet dignified" worker housing envisioned by GATCPAC was stripped of its collective facilities and egalitarian spatial ethos, becoming an introverted residential compound (Hernández Falagán & Rosselló Nicolau, 2024). As Topçu (2018) notes, this transformation was not merely physical but ideological: a

pioneering experiment in social housing became, with its darkened façades and arbitrary alterations, a "ghost block" of authoritarian control. The example vividly illustrates the shift from the reformist goals of the Republic to the paternalist and repressive housing policies of the Franco era (Sambricio Echegaray, 2020).

The democratic transition after 1975 slowly altered the fate of Casa Bloc. In 1986, the Barcelona City Council commissioned architects Jaume Sanmartí and Raimon Torres to restore Block 1 and its stair cores, while horse stables constructed in the courtyard were demolished the same year. In 1992, the complex was designated a "Cultural Asset of National Interest," and a comprehensive restoration program was launched by INCASÒL and a new generation of architects (Víctor and Marc Seguí) following a conservation protocol signed in 1997 (DHUB, 2011; Casanova, 2012; Topçu, 2018).

Between 1997 and 2008, the façades, roofs, common areas, elevators, staircases, and structural elements were rehabilitated. The Bloc fantasma was demolished and the two original courtyards reopened, re-establishing the spatial continuity envisioned in the 1930s (Figure 4). The restoration aimed not to erase the building's complex history but to recover its architectural integrity and make visible the lightness, permeability, and collectivist principles that defined GATCPAC's design (Casanova, 2012; García and Rovira, 2009).

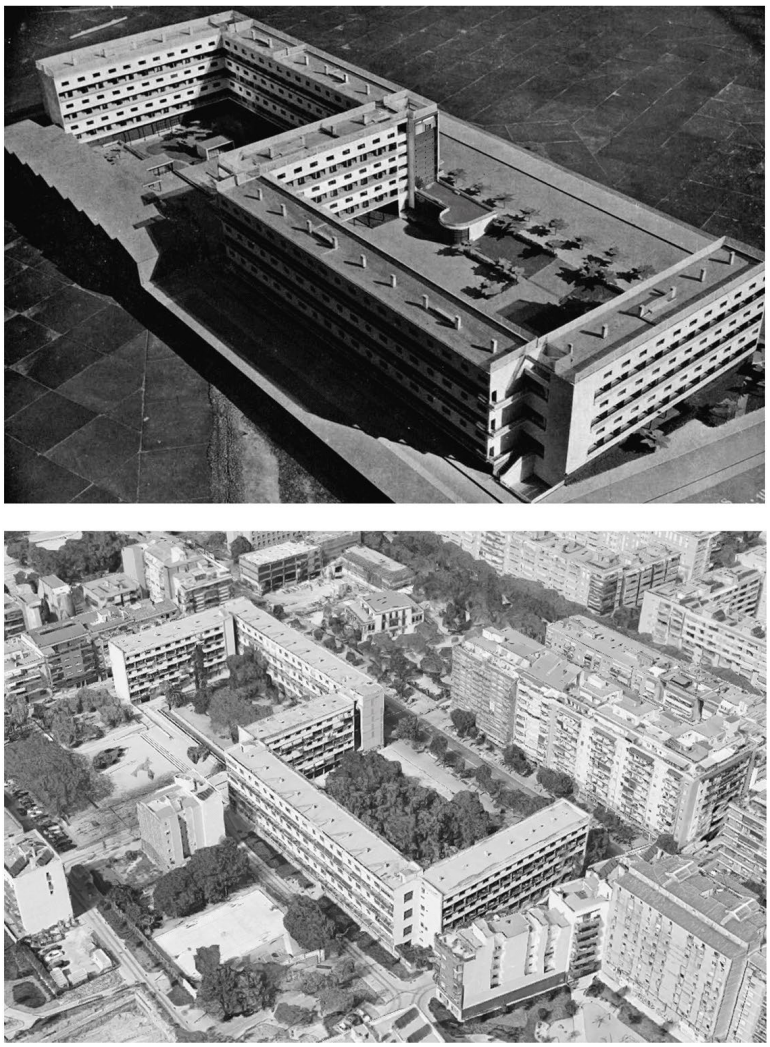

Figure 4. Aerial perspective of Casa Bloc after the demolition of the 'Bloc Fantasma.'

(Source: https://bakarchitecture.com/projects/casa-bloc)

The most symbolic outcome of this process was the restoration and musealization of Apartment 1/11. Located on the first floor of Block 2, the duplex unit was stripped of later alterations and reconstructed as closely as possible to its original state based on archival drawings, stratigraphic paint analysis, and material research. Hydraulic mosaic tiles salvaged from empty units were reused, metal fixtures were repaired, and the block's only surviving original steel shower tray—an industrial component aligned with Modern Movement aesthetics and serial production principles—was preserved (DHUB, 2011; Casanova, 2012). The color scheme—light blue for walls and ceilings, dark blue for stair railings, and orange for exterior grilles—was recreated through research conducted with the University of Barcelona's Department of Crystallography and Mineralogy, reflecting GATCPAC's broader chromatic palette (Casanova, 2012) (Figure 5).

Figure 5. Interior views of the restored Casa Bloc unit

Furniture was selected and, when necessary, reproduced in accordance with GATCPAC's philosophy and the designs published in A.C.: standard consoles, wardrobes, and beds by Bartomeu Llongueras; Marcel Breuer's folding table; Thonet folding chairs; and period pieces by Barcelona firms such as Grifé & Escoda and MIDVA (Casanova, 2012; Andreu Carrascal, 2010). As Topçu (2018) highlights, the resulting interior is not a decorative reconstruction but a didactic space that allows visitors—nearly a century later—to experience the everyday scale of a modern worker's dwelling as envisioned by GATCPAC.

Taken as a whole, the transformations of Casa Bloc between 1932 and 2010 trace a complex trajectory from an avant-garde social housing prototype to authoritarian appropriation and physical degradation, and finally to its careful restoration as a modern heritage site. In this process, the building has become not only an architectural object but also a "memory device" through which the ideals, conflicts, and contradictions of Spanish modernity can be spatially read (Casanova, 2012; Sabatino, 2009; Topçu, 2018).

4. REACTIVATING THE MODERN IDEAL: LLAR CASA BLOC AND THE SOCIAL REUSE OF MODERN HERITAGE (2016–2021)

Following the phases of restoration and musealization, Casa Bloc regained significance as a "living laboratory" for experimenting with new models of socially oriented reuse of modern architectural heritage. Rather than fixing the building in its original 1930s state, recent initiatives have sought to reconnect its architectural fabric with contemporary forms of vulnerability, care relations, and housing precarity—thus developing in meaningful continuity with broader European debates on the social function of modern heritage (Hernández Falagán & Rosselló Nicolau, 2024; World Habitat, 2019).

The first step in this transformation occurred in 2016, when the Catalan Housing Agency (Agència de l'Habitatge de Catalunya) transferred the Casa Bloc Residence to the Hàbitat3 Foundation for its conversion into supported housing for individuals at risk of social exclusion, and accordingly launched an architectural competition. The winning proposal by Fàbric Studio + Desbloc, titled "Llar Casa Bloc," put forward a reuse strategy that integrated heritage conservation, care infrastructures, and social inclusion, drawing directly on GATCPAC's early social reform ideals (INCASÒL, 2017). This approach was grounded in the idea that modernist heritage should not be treated solely as an aesthetic object to be preserved, but as a resource capable of generating responses to contemporary social needs.

The rehabilitation works initiated in 2020 introduced technical, spatial, and infrastructural interventions that adapted the building's two previously unused floors to the requirements of modern social housing. After completion, the first residents moved into the 17 supported housing units in February 2021, creating a new bridge between Casa Bloc's historical modernist principles and today's social inclusion and care policies. Approximately forty people currently live in Llar Casa Bloc: households facing forced eviction, individuals at risk of homelessness, survivors of gender-based violence, people with mental health challenges, and individuals with intellectual or physical disabilities—each accommodated through an income-adjusted rental model. Specialized teams from organizations such as Provivienda, Prohabitatge, Fundació Astres, and Esclat provide individualized social inclusion programs for all residents (Habitat3, 2020–2021).

The spatial strategy of Llar Casa Bloc aimed to fuse architectural conservation with contemporary social functions in a holistic manner. Energy efficiency was enhanced, accessibility standards were improved, shared kitchens and social spaces were created, and all units were equipped with WiFi networks and digital energy-monitoring systems. This infrastructure—developed in collaboration with Cellnex Telecom, the Naturgy Foundation, and Ariston—supports goals such as reducing the digital divide, alleviating energy poverty, and lowering residents' living costs, while establishing an unexpected continuity with Casa Bloc's 1930s design principles centered on light, ventilation, and health (Roca Barcelona Gallery, 2023). Semi-public circulation areas overlooking the open courtyards, along with spatial arrangements encouraging social interaction, facilitated a renewed encounter between the modernist ideal of "collective life" and contemporary care-oriented policies (Figure 6).

Figure 6. Current views of Casa Bloc

This transformation positioned Llar Casa Bloc as one of the most innovative architectural pilot sites within Habitat3's broader social housing strategy. Habitat3's "Viviendas para las Entidades Sociales" (Housing for Social Entities) program, launched in response to the housing crisis aggravated after 2008, developed a regional model that has allocated vacant dwellings to individuals facing social exclusion since 2015. The program was awarded the 2019 World Habitat Award not only for providing housing but also for creating employment opportunities for marginalized groups through renovation works, establishing an income-adjusted rental system, and developing strong social support mechanisms (World Habitat Awards, 2019). Within this context, Llar Casa Bloc became the program's most distinctive application in the field of modern architectural heritage, gaining international visibility and demonstrating how the social inclusion potential of modernist housing can be re-integrated into contemporary demands for housing rights and social justice.

In sum, the transformation of Casa Bloc represents a multidimensional rebirth that aligns the building's historical layers with current social policy needs. The modernist ideal is no longer interpreted solely as a rational design program but as a contemporary architectural-social framework that supports vulnerable groups and strengthens social solidarity. Thus, Casa Bloc emerges as a "social heritage project" that materializes the continuity between the modernist utopias of the 1930s and the social inclusion models of the 2020s.

5.CONCLUSION

The nearly century-long trajectory of Casa Bloc offers a multilayered lens through which to examine the social function of modern architecture, its ideological transformations, and the ways in which architectural heritage has been reinterpreted across different periods. Designed in the 1930s by GATCPAC as an

experimental prototype for modern urbanization and the pursuit of social justice, the building largely lost its functional and ideological coherence under the pressures of wartime conditions and the authoritarian policies of the Franco regime. Yet, with the democratic transition, it was brought back into public visibility and secured a distinctive place within the catalog of modernist heritage.

The restoration and musealization efforts undertaken after 2010, together with the Llar Casa Bloc project implemented between 2016 and 2021, demonstrated that the building could be revitalized not only physically but also socially, ethically, and politically. This transformation clearly reveals that modernist heritage is not a static historical category but rather a dynamic intellectual resource capable of being rearticulated in relation to the social needs of different periods.

GATCPAC's early modernist principles—health, light, ventilation, collective life, and the restorative value of public space—have acquired new significance within the twenty-first century frameworks of social care and inclusion. In this sense, Llar Casa Bloc provides a compelling example of how modernist spatial principles can be adapted to contemporary forms of vulnerability and risks of social exclusion, demonstrating the renewed potential of modern heritage as a socially operative category.

This process of adaptive reuse has enhanced Casa Bloc's visibility as a unique application of Habitat3's "Viviendas para las Entidades Sociales" program—an initiative internationally recognized through the 2019 World Habitat Award. In doing so, the building has become not only a conserved modernist artifact but also a spatial interface for contemporary policies concerning social inclusion, equity, digital accessibility, and the mitigation of energy poverty. Casa Bloc thus illustrates how architectural heritage can function as a transformative tool with the capacity to generate social well-being, extending far beyond its aesthetic or historical value.

In conclusion, Casa Bloc stands as a rare example that forges a multidimensional continuity between the historical layers of modernist utopia, the ruptures created by war and political authoritarianism, and today's search for social innovation. The modern ideal reactivated through Llar Casa Bloc not only carries the spatial vision of the past into the future but also foregrounds the social potential of architectural heritage, enriching contemporary debates in architecture and urbanism.

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AN INTERIOR FORMAL IDENTITY STUDY OF 19TH-CENTURY ISTANBUL BUILDINGS IN BEYOĞLU ADAPTIVELY REUSED AS "CULTURE - ARTS CENTERS AND MUSEUMS"

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ABSTRACT

Istanbul has maintained it's status as a global city accommodating numerous ethnic groups and a rich diversity of languages and religions throughout its historical evolution. In accordance with the Ottoman Empire's settlement policies, the arrival of minority communities in the city—together with Jewish populations migrating from Europe—fostered the emergence of a distinctly cosmopolitan environment.

The architectural texture of Beyoğlu in the early 19th century, along with the condition, typological character, and cultural significance of the buildings within the district, must be examined comprehensively within the framework of cultural heritage. Addressing the challenges encountered in the conservation of this heritage is essential for sustaining the district's historical and cultural identity.

This study focuses on 19th-century historic structures in Istanbul's Beyoğlu district that have been preserved and currently function as "Culture - Arts Centers and Museums". The research examines the historical development of the Beyoğlu region, its socio-cultural and economic structure, the criteria for adaptive reuse, and the degree to which these structures comply with such criteria. In this context, architectural and interior architectural interventions are analyzed together with the contributions these buildings make to their surrounding urban environment.

Additionally, the study evaluates European examples with similar functions, as well as buildings in Turkey that have been adapted into "Culture - Arts Centers and Museums" while maintaining their 19th-century architectural characteristics. The analysis emphasizes the legibility of these building's formal identities and interior spatial identities, and investigates the preservation of the relationship between spatial identity and interior furnishings.

KEYWORDS: 19th-Century Buildings, Formal Identity, Historic Structures, Cultural Heritage Assets, Eclecticism, Renovation, Adaptive Reuse.

1. INTRODUCTION

Istanbul has preserved its status as a global metropolis that has accommodated numerous ethnic groups and a rich diversity of languages and religions throughout its historical development. In accordance with the Ottoman Empire's settlement policies, the arrival of minority communities in the city—along with Jewish populations migrating from Europe—contributed to the formation of a distinctly cosmopolitan environment. During the 19th century, as the Empire's relations with the West intensified, Armenians, Greeks, Jewish communities, and Levantines settled in districts such as Balat, Fener, Kumkapı, and especially Beyoğlu, Galata, and Pera, creating unique lifestyles and distinctive urban environments.

In the early 19th century, the architectural texture of Beyoğlu was characterized by the presence of minority dwellings and houses with garden belonging to Muslim residents. By the mid-19th century, however, the construction of timber houses became restricted due to devastating fires and external influences, leading to the widespread adoption of masonry structures as the characteristic residential typology of the period. By the end of the century, multi-storey apartment buildings replaced the earlier two- and three-storey residential units. In the 19th century, when the Ottoman Empire clarified its architectural orientation under Western influence, new building typologies and eclectic architectural practices became increasingly prevalent. Consequently, the condition and characteristics of the structures within the district—many of which encompass significant historical and cultural symbols—must be examined comprehensively within the context of cultural heritage, and existing challenges in preservation must be addressed.

This study examines 19th-century historic buildings within the Istanbul/Beyoğlu district that have survived to the present and currently function as "Culture - Arts Centers or Museums". Seven buildings in Beyoğlu were selected; their restoration and adaptive reuse projects were analyzed, and based on implementation data, the extent to which the historical and characteristic formal façade attributes were reflected in their interior spaces was evaluated through a comparative study involving sixteen examples with the same function located in various European countries. Within the framework of conservation and adaptive reuse criteria, the compatibility between façade characteristics and interior spatial identities was assessed both from a professional perspective and from the viewpoint of users, and the findings were presented accordingly.

The historical development of the Istanbul/Beyoğlu region and its socio-cultural and economic structure were examined with specific reference to the impact of the Ottoman settlement policy on urban morphology and architectural development. The case studies of buildings in Beyoğlu that have been adaptively reused as Culture - Arts Centers or Museums were analyzed not only in terms of their structural aspects, but also in relation to their façade characteristics, formal attributes, functions, and material properties. Furthermore, the adaptive reuse criteria implemented in Turkey, the degree to which these structures complied with those criteria, and the architectural and interior architectural solutions applied during the transformation process were evaluated along with the contributions these buildings offer to their surrounding urban context.

In Beyoğlu, Pera, and Galata, buildings that have undergone adaptive reuse were examined from a multi-dimensional perspective, including those whose entire structures have been preserved and those with preserved façades only. Their planning characteristics, interior spatial qualities, structural features, lighting and mechanical systems, and functional–spatial relationships were evaluated. The formal attributes of buildings that retain their 19th-century characteristics and those with preserved façades were analyzed in relation to their influence on the formation of interior spatial identity. User perceptions of interior identity were assessed through a survey, and the results were evaluated based on the responses provided by the participants.

The selected cultural center buildings in Istanbul/Beyoğlu were compared with European examples of buildings serving the same function, based on the conservation and adaptive reuse principles and practices currently in effect in Europe. Sixteen 19th-century buildings functioning as Culture - Arts Centers or Museums in Europe were selected, and their spatial qualities, the conditions of structures incorporating

annex buildings, and the identity of their interior spaces in relation to their 19th-century formal attributes were examined. Through these European and Turkish examples, the legibility of formal identity and interior spatial identity, as well as the preservation of the relationship between spatial identity and interior furnishings, were critically evaluated.

Based on the identified characteristics of 19th-century Culture - Arts Center and Museum buildings in Europe, a comprehensive assessment was conducted, addressing the issue of formal identity observed within the interiors of similarly functioning 19th-century buildings in Beyoğlu. The study emphasizes the necessity of establishing new regulations that reconsider conservation priorities and redefine preservation criteria based on contemporary needs and professional standards.

2. FIELD RESEARCH

According to contemporary restoration and renewal criteria, the design of interior spatial configurations should establish a coherent identity that relates to the architectural character of the building, both formally and structurally. However, it is evident that such principles are not consistently reflected in current practices in Turkey. Considering the preservation and adaptive reuse criteria—accepted also in Turkey and defined as a shared language within the European context—it becomes crucial to discuss and evaluate the issue through comparative analyses with European examples. In 19th-century buildings, sustaining formal identity in interior spaces is just as important as preserving façades, as the conservation and continuity of interior spatial textures play a decisive role in maintaining architectural integrity.

In Turkey, when renewing buildings that possess historical value and are recognized as cultural heritage assets, it is essential not only to preserve their original architectural characteristics on the exterior but also to prioritize the preservation of their interior spatial identity. This study aims to highlight this necessity, to examine existing examples, to draw attention to the issue of interior identity in renovated historic buildings, and to open the discussion through proposed recommendations. Within this context, 19th-century masonry buildings in Beyoğlu—selected as the pilot area—were analyzed to develop a critical perspective and establish a foundation for further proposals.

Today, the adaptive reuse of historic structures remains one of the most widely implemented methods of preservation. The buildings included in this research share similar functions, which plays a significant role in identifying the issue of spatial identity. For this reason, buildings that currently function as Culture - Arts Centers and Museums, but that originally served as apartments, hotels, or banks in the 19th century, were selected. By examining the original architectural drawings alongside current conditions and the plans illustrating the adaptive reuse process, the study aims to identify the formal interior identity characteristics and reveal the elements that have contributed to a loss of spatial value.

Within the scope of this research, seven buildings located in the Istanbul–Beyoğlu district—where structures functioning as Culture - Arts Centers and Museums are predominant—were selected. The original and post-renovation interior characteristics of these buildings were analyzed, and in consideration of Beyoğlu's historical development and its socio-cultural and economic structure, their interaction with the surrounding urban environment was also addressed. The buildings were evaluated according to preservation and renewal criteria within this broader contextual framework.

3. EVALUATION OF INTERIOR SPATIAL CHARACTERISTICS AND FORMAL IDENTITY IN BUILDINGS ADAPTIVELY REUSED AS "CULTURE - ARTS CENTERS AND MUSEUMS" IN ISTANBUL–BEYOĞLU

Adaptive reuse is defined as "assigning a new function—different from the original one—to a historic building that maintains structural potential for continued use, while preserving the cultural or architectural qualities that reflect its value through restoration and additions" (Cantell, 2005).

For cultural heritage assets that have lost their original functions, the issue of "functional revitalization" can be addressed in two ways: passive preservation and active preservation. Passive preservation refers to using the building solely for the purpose of maintaining it—typically as a museum—without consideration of contemporary needs. Active preservation, on the other hand, involves assigning a new function to a heritage building whose original function is no longer viable, thereby reintegrating the structure into daily life.

Providing new functions to cultural heritage structures after a certain period of use creates a significant bridge between the past and the future. In 1943, Ali Saim Ülgen, in the preface of "Preservation and restoration of Monuments "—considered the first scholarly publication on the subject in Turkey—stated that "buildings without function cannot be preserved" (Ülgen, 1943).

The buildings selected for this study, each of which has gained renewed value through adaptive reuse in Istanbul, include:

The ıstanbul Foundation for Culture and Arts (İKSV) Nejat Eczacıbaşı Building, Şişhane; Salt Beyoğlu, İstiklal Avenue; Salt Galata, Bankalar Avenue; Pera Museum, Tepebaşı; Arter Art Center, İstiklal Avenue; Borusan Culture and Arts Building, İstiklal Avenue; and Akbank Art Building, İstiklal Avenue (Figure 3.1)..

Figure 3.1: *Selected buildings functioning as "Culture and Arts Centers and Museums" in Beyoğlu–Pera–Galata (BK).*

In the selected examples, the relationship between structural conditions and functional characteristics was examined to reveal their influence on spatial identity. The formal attitude expressed on the façades of the buildings was compared with the design language of their interior spaces. When architectural and spatial analyses were evaluated within the context of the adaptive reuse criteria applied in Turkey, it was observed that the Pera Museum(Figure 3.2-Figure 3.3), Borusan Art(Figure 3.4 – Figure 3.5), and Akbank Art(Figure 3.6 – Figure 3.7) buildings were reconstructed with an approach that preserved only their façades, while redesigning their interiors in a manner that minimizes—or entirely severs—the relationship with the 19th century.

Figure 3.2 : *Exterior view of the Pera Museum Building*

Photo: Sedef Acar (SA)

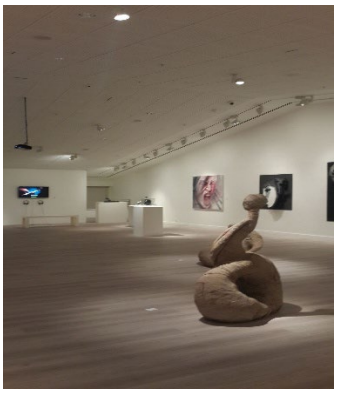


Figure 3.3 : *Interior exhibition space view of the Pera Museum building*

Photo: Sedef Acar (SA)

Figure 3.4 : *Exterior view of the Borusan Building*

Photo: Sedef Acar (SA)

Figure 3.5 : *Interior view of the Borusan Building*

Photo:Sedef Acar (SA)

Figure 3.6 : *Exterior view of The Akbank Art Building*

Photo: Sedef Acar (SA)

Figure 3.7 : *Interior view of the Akbank Art Building*

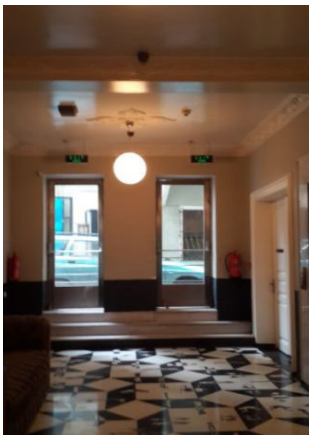
Photo: Sedef Acar (SA)

An approach that preserves only the exterior façade of a historic building while redesigning its interior with a completely different architectural language deviates from fundamental principles of structural heritage preservation. While such an approach superficially contributes to the historical identity of the city, it simultaneously restricts the user's spatial experience. Thus, although the preserved 19th-century exterior envelope draws urban users into the building, the interior—characterized by a divergent architectural language—creates temporal disconnect that diminishes the legibility of the building's historical identity.

In the İKSV Nejat Eczacıbaşı Building(Figure 3.8 – Figure 3.9), Salt Beyoğlu(Figure 3.10 – Figure 3.11), Salt Galata(Figure 3.12 – Figure 3.13), and Arter building's(Figure 3.14- Figure 3.15), the façades prominently exhibit the eclectic characteristics of the period, while the interiors generally retain their original plan schemata. Depending on functional requirements, some partition walls between spaces on the floors have been removed to create larger exhibition areas. The staircases, however, have been preserved with their original material qualities, maintaining the character of the building and reflecting the design language of the period in which they were constructed.

Figure 3.8 : *Exterior view of İKSV Building*

Photo: Burhan Satıcı(BS)



Şekil 3.9 : *Interior view of İKSV Building*

Photo: Burhan Satıcı (BS)

Figure 3.10 : *Exterior view of Salt Beyoğlu Building*

Photo: Iwan.Baan (İB)

Figure 3.11 : *Interior view of Salt Beyoğlu Building*

Photo: İwan Baan (İB)

Figure 3.12 : *Exterior view of Salt Galata Building*
Photo: İwan.Baan (İB)

Figure 3.13 : *Interior view of Salt Galata Building*
Photo: İwan Baan (İB

Figure 3.14 : *Exterior view of Arter Building*
Photo: Sedef Acar (SA)

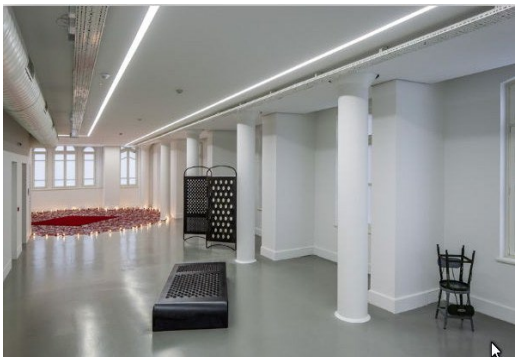


Figure 3.15 : *Interior view of Arter Building*
Photo: Sedef Acar (SA)

It has been observed that contemporary materials are generally used in circulation areas and that all buildings have been renovated with the addition of extra floors. These interventions demonstrate that the interiors have been renewed with attention to establishing a relationship between structural characteristics and the building's original period identity.

During the adaptive reuse of the Salt Beyoğlu building, although the period features of the structure were preserved, the interior spatial language evolved toward a contemporary expression in order to create functional areas, which came to dominate the overall character of the building and was reinforced by the choice of materials. Elements that ensured the operational functionality of the 19th-century structure were updated, and a secondary building with a contemporary design language was introduced within the original structure.

4. EVALUATION OF INTERIOR SPATIAL CHARACTERISTICS AND FORMAL IDENTITY IN BUILDINGS ADAPTIVELY REUSED AS "CULTURE - ARTS CENTERS AND MUSEUMS" IN EUROPE

An examination of 19th-century buildings in Europe that have been adaptively reused as "Culture - Arts Centers and Museums" reveals that these structures are restored in accordance with international preservation and adaptive reuse criteria. When European conservation principles are considered in general,

it becomes evident that a common approach is applied across countries, with shared decisions formalized through regulations, declarations, and reports established in various meetings over the years (icomos.org.tr).

International charters guiding conservation practices in Europe emphasize adaptive reuse as a key aspect of architectural heritage preservation. These documents recommend assigning new functions to cultural heritage structures that have lost their original purpose. The feasibility and conditions of functional changes are generally determined by universally accepted decisions, which have also been adopted by Turkey. These guidelines suggest that any functional modification should respect the historical personality of the building and that alternative uses are acceptable as long as they do not affect the structure or its character, either internally or externally (Aşkun, Yüce, P. İlgi, p. 28).

For the purpose of comparative analysis, European examples were selected based on functional similarity, including buildings in Amsterdam, Athens, Dresden, Malaga, Oviedo–Asturias, Paris, Prague, St. Petersburg, Sofia, Bucharest, and Vienna. Constructed in the 19th century and currently functioning as "Culture -Arts Centers and Museums", these buildings were analyzed with respect to European conservation and adaptive reuse criteria. The preservation of their interior formal identity was evaluated, and the collected data were used to assess the spatial identities of the selected Beyoğlu buildings.

Among the sixteen buildings studied, which were built between 1800 and 1897, nine were renovated while maintaining their original interior use and period characteristics. Six of the remaining buildings preserved the period features while incorporating additions, and one building retained only its façades, being entirely reconstructed with a contemporary design while using 19th-century structural elements.

It was observed that all European adaptive reuse projects follow a program that establishes priorities according to the existing conditions of the buildings. Additions are typically made to damaged structures or entry areas and are generally constructed with modern materials such as concrete, steel, and glass, incorporating contemporary structural and architectural identity.

In Amsterdam, at the Stedelijk Museum of Contemporary Art and Design, a modern building was added adjacent to the historic brick structure, forming a cohesive whole. Circulation between the old and new buildings was designed with a unified interior spatial language (Figure 4.1).

Figure 4.1: *Stedelijk International Museum of Contemporary Art and Design, ,Amsterdam,Holland*

Photo: Jannes Linders

Additions were made to several European buildings during their adaptive reuse: at the Dresden Military Museum, a new structure was added to replace the section damaged during the war (Figure 4.2); in the Sofia National Museum complex, extensions were constructed in place of buildings destroyed during World War II (Figure 4.3); and at the main entrance of the Salmovsky Palace in Prague, additions were made to accommodate a visitor information center (Figure 4.4).

Figure 4.2: *Dresden "Military Museum" Building, Germany. archdaily.com*

Figure 4.3: *National Museum Campus", Sofia, Bulgaria Steel Construction + glass*

Photo: Assen Emilov(AE)

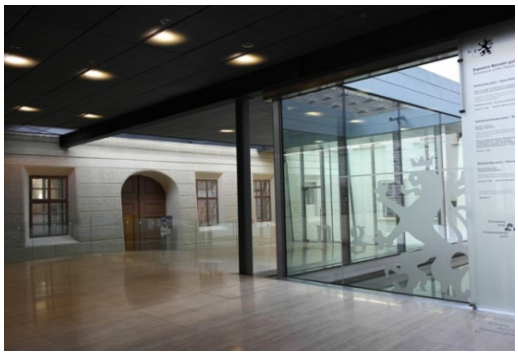


Figure 4.4: *Salmovský Palace (National Gallery)''building - Schwarzengberg Palace, Czech Republic*

Photo : Sedef Acar(SA)

As a result of a fire at the Málaga Museum of Fine Arts and Archaeology, the roof and intermediate floors were destroyed. Subsequent reconstruction with additional floors using a steel structure and a flat roof led to a significant departure from the original design. (Figure 4.5).

Figure 4.5 : *Malaga Museum of Fine Arts and Archeology,Spain*

.Photo: Roland Halbe

5.CONCLUSION

In places where structural and spatial identities are clearly legible, integrating additions in a way that alters the identity language while maintaining a relationship with the original building—or developing solutions with contrasting character—can be regarded as a method that strengthens the reading of the building's identity and contributes to its preservation. When examined from both physical and social perspectives, buildings and spaces carry meanings associated with a sense of belonging, explained through the concepts

of memory, moment, and place. Structures and spaces designed to meet functional purposes and requirements are often imbued with symbolic sub-meanings. The reciprocal relationship between spatial and formal identity develops in connection with these meanings and shapes our experiences.

Historic buildings convey their identity through their positioning relative to one another, the usage of interior and exterior spaces, materials employed, construction techniques, and the formal characteristics that have emerged historically, alongside traces of social life. “Identity” is shaped by continuity within the physical and social structure under contemporary conditions and is transmitted to future generations.

In renewal and preservation practices, proposals addressing the “formal identity” issues encountered predominantly in interiors of adaptively reused buildings should be developed within this framework. Prioritizing spatial solutions is not merely an option but a necessity for preserving the building’s true value and transmitting it to the future.

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INTEGRATION OF GREEN SPACES IN SCHOOLS: ENHANCING PSYCHOLOGICAL AND EDUCATIONAL WELL-BEING

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ABSTRACT

At the dawn of the 21st century, with the emergence of denser urban agglomerations, cities have been confronted with the loss of green spaces, the effects of which are palpable in various sectors of society, ranging from health, economic, environmental, cultural, and educational areas. Regarding educational facilities, the obscuring of green spaces has been a growing concern, coinciding with environmental degradation and the loss of green infrastructure. With sustainable architectural practices affecting educational settings, a number of influential movements have flourished, revealing themselves through green schools, sustainable schools, and biophilic design, yet overlooking the importance of educational and psychological impacts due to an over-reliance on environmental and economic parameters. In this context, this study argues why greenery integration should become increasingly important, especially in school architecture, to foster both psychological and educational effects. Thus, this paper explores the potential of integrating green spaces in educational settings to foster children towards better engagement with the natural environment in order to support their well-being and increase both their learning capacity and performance. Adopting a methodology based on the analysis of international case studies and literature reviews, this study explores a set of green space typologies, including vertical gardens, living walls, rooftop gardens, and outdoor learning spaces. The contributions of these spaces are reappraised and categorized in terms of their impact on psychological well-being, academic performance, emotional connection, visual stimulation, and environmental outcomes. The successful integration of greenery, even in the case of dense urban environments, can drastically improve the well-being of students and enhance their cognitive function. Thus, addressing the potential of green spaces in sustainable school architecture, guided and supported by school project examples around the world, articulates their necessity as an essential element for both pedagogical and environmental key factors in contemporary school design.

KEYWORDS: educational settings, green space, sustainable schools, well-being, pedagogical design

1. INTRODUCTION

The relationship between the learning environment and the learner is reciprocal; as we shape our schools, they, in turn, shape the cognitive and emotional development of future generations. In an era where students spend a significant portion of their waking hours within school boundaries, the architectural quality of these spaces becomes a critical determinant of their well-being. Yet, as educational paradigms shift towards holistic development, the architectural response, particularly in dense urban settings, often lags, failing to integrate the restorative power of nature into the daily learning experience.

1.1. Problem Definition

The rapid acceleration of urbanization in the 21st century has led to the formation of dense urban agglomerations, often at the expense of the natural environment. As cities expand vertically and horizontally, the resultant loss of green space has led to a measurable decline in ecological and social quality within the urban fabric. This triggers public health issues, weakens environmental resilience, and deepens social inequity. This "extinction of experience," as termed by Pyle (1993), suggests a growing alienation from nature. This detachment is particularly detrimental to younger generations maturing in concrete-dominated environments.

In the educational sector, this spatial constraint resonates as schools with limited outdoor areas, reducing the physical environment to mere "functional containers of instruction" rather than holistic developmental spaces. Contemporary educational facilities often mirror the pressures of urban density; playgrounds are sealed with impermeable surfaces, and vegetation is marginalized to the periphery. This physical disconnection exacerbates what Richard Louv described as "nature-deficit disorder," linking the absence of nature to rising trends in childhood obesity, attention disorders, and depression (Louv, 2008). Despite the documented benefits of biophilic integration, modern school architecture frequently prioritizes security, surveillance, and ease of maintenance.

While previous studies in environmental psychology (e.g., Matsuoka, 2010; Tanner, 2008) have examined school environments, much of the architectural discourse remains fixated on operational metrics such as LEED certification and energy efficiency. Consequently, the potential of specific architectural interventions to mitigate these psychological deficits remains underexplored.

1.2. Research Question and Thesis

Although the "green school" movement has gained momentum, architectural discourse has predominantly focused on technical sustainability, carbon footprints, and energy performance. While pivotal, these metrics often overshadow the human dimension of sustainability. There remains a significant gap in the literature regarding how architectural interventions utilizing greenery specifically influence pedagogical outcomes and psychological resilience. The focus must shift from schools that merely "do less harm" to the environment to those that actively "do more good" for their occupants' cognitive and emotional states.

This paper addresses the following research question: How does the architectural integration of green spaces in schools influence students' psychological well-being and academic performance? The central thesis posits that integrating green spaces, such as vertical gardens, rooftops, and outdoor classrooms, is not an architectural luxury or a mere aesthetic choice, but a pedagogical necessity. These spaces provide foundational support for cognitive restoration and emotional regulation in learning environments.

For this study, psychological well-being is defined as stress reduction, emotional regulation, and perceived comfort. Academic performance refers to concentration levels, working memory, and cognitive engagement as defined in the reviewed literature.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

To address this research question comprehensively, it is necessary to move beyond anecdotal evidence and ground the inquiry in established psychological theories. This study integrates two complementary theoretical frameworks: Biophilic Design, which addresses the innate human need for nature, and Attention Restoration Theory (ART), which explains the cognitive mechanisms of recovery in natural settings. Together, these theories provide a robust lens for analyzing the transition from "school as a container" to "school as a restorative environment.

2.1. Biophilic Design Principles

The theoretical foundation of this study rests on the "Biophilia Hypothesis," introduced by E.O. Wilson, which suggests an innate human tendency to seek connections with nature and other forms of life (Wilson, 1984). Translated into architecture by Kellert, biophilic design is not merely about inserting vegetation but involves creating a habitat that biologically supports human health, aligning with emerging neuro-architectural evidence. In schools, this implies designing spaces that reflect the natural geometries, light, and complexity that the human brain evolved to process (Kellert et al., 2008). The analysis in this study applies Kellert's primary categories, direct experience of nature, indirect experience of nature, and place-based design, as its central analytical lenses.

2.2. Attention Restoration Theory (ART)

Kaplan and Kaplan's Attention Restoration Theory (ART) provides the psychological mechanism explaining how nature aids learning processes. The theory posits that "directed attention," the type used for studying and problem-solving, is a finite resource that fatigues over time. Central to this theory is the distinction between 'hard fascination' and 'soft fascination.' Hard fascination (e.g., screens, competitive sports) grabs attention aggressively and blocks reflection. In contrast, natural environments provide 'soft fascination' (e.g., clouds, rustling leaves), which captures attention effortlessly. Kaplan (1995) argues that this effortless engagement creates a unique cognitive space for reflection, allowing the neural mechanisms of directed attention to replenish. In school contexts, where task density causes attentional fatigue to accumulate rapidly, green spaces act as essential restorative zones.

2.3. Impact on Psychological Well-being

Research indicates that visual or physical access to greenery significantly lowers cortisol levels, a primary marker of stress. Ulrich's (1984) pioneering work demonstrated that views of nature facilitate faster physiological recovery compared to urban views. Building on this, ethnographic studies highlight the role of green schoolyards as "protective havens." Chawla et al. (2014) emphasize that students explicitly seek out natural areas, such as wooded edges or gardens, to manage social anxiety and academic pressure. These spaces provide critical resources for emotional regulation, allowing students to regain a sense of peace and competence amidst the demanding school environment.

2.4. Impact on Cognitive and Academic Performance

Evidence suggests a robust correlation between green schoolyards and academic achievement, moving beyond anecdotal observations to measurable outcomes. Early studies by Matsuoka (2010) and Tanner (2008) showed that students with views of vegetation performed better on standardized tests compared to those overlooking built structures. More recent research confirms causality and specifically highlights cognitive restoration. Li and Sullivan (2016) experimentally demonstrated that high school students with green window views not only recovered faster from stress but also exhibited significantly higher attentional functioning than those in windowless rooms. Furthermore, in a large-scale longitudinal study utilizing

satellite imagery, Dadvand et al. (2015) found that increased greenness surrounding schools was associated with a 5% increase in working memory progress and a reduction in inattentiveness over 12 months. These findings suggest that nature exposure enhances cognitive flexibility, a critical component for creative problem-solving.,

2.5. Behavioral and Social Effects

Beyond cognition, green spaces profoundly influence social dynamics and physical activity patterns. While conventional asphalt playgrounds primarily support vigorous, rule-bound sports that may exclude some students, green school grounds foster a wider range of inclusive activities. Dyment and Bell (2008) observed that naturalized areas invite diverse movements such as climbing, digging, and imaginative play. Crucially, these environments soften the rigid social hierarchies often found in indoor classrooms. Unstructured play in green settings has been linked to reduced aggressive behavior and bullying, promoting more cooperative and imaginative social interactions compared to paved environments.

3. METHODOLOGY

Translating these theoretical concepts into architectural analysis requires a specific methodological design that can capture both spatial qualities and user experience. Case study selection followed two criteria: (1) explicit integration of green architecture, (2) geographic diversity to avoid contextual bias.

3.1. Research Design

This study employs a qualitative research methodology anchored in a multiple-case study approach. This design was selected to allow for a holistic and interpretive examination of how specific architectural features, namely, integrated green spaces, interact with pedagogical aims and human behavior. By triangulating theoretical insights with spatial analysis, the study aims to bridge the gap between biophilic theory and architectural practice in educational settings.

3.2. Data Collection Methods

Data were collected from two primary sources to ensure methodological rigor: the Literature Review and Case Study Analysis. First, a systematic review of empirical studies published in peer-reviewed journals (e.g., Journal of Environmental Psychology, Children's Geographies), alongside seminal books and technical reports focusing on biophilic design, educational psychology, and spatial perception.

Then, an architectural analysis of selected international school projects where green space integration is a core design driver. The analysis relies on architectural drawings (plans, sections), photographic documentation, and available post-occupancy feedback.

The selection of case studies followed three strict criteria:

Explicit Integration: The school must feature green architecture not as decoration, but as a functional pedagogical element.

Data Availability: Availability of comprehensive architectural documentation and descriptive accounts of user experience.

Contextual Diversity: Selection of cases from a range of urban and climatic contexts to incorporate diverse spatial challenges and solutions, strengthening the transferability of the findings.

3.3. Analysis Method

A thematic analysis was conducted to synthesize findings across the selected cases. Data were categorized under predefined themes aligned directly with the theoretical framework established in Section 2:

Psychological Well-being (Stress reduction, emotional regulation)

Cognitive and Academic Performance (Attention restoration, focus)

Social Dynamics (Behavioral patterns, play types)

This thematic framework enabled a comparative cross-case analysis, revealing how different architectural typologies afford specific developmental benefits.

4. Findings and Analysis: Green Space Typologies for School Architecture

Through the application of the defined qualitative framework, the investigation revealed distinct patterns in how schools integrate nature. The analysis identifies four primary typologies of green integration. Each typology serves distinct pedagogical and psychological functions, moving beyond ornamentation to become active components of the learning ecosystem.

4.1. Vertical Gardens and Living Walls

Vertical gardens and living walls directly operationalize the biophilic design principle of 'direct experience of nature,' bringing living systems into the immediate visual and sensory field of students. They function as a constant source of 'soft fascination,' offering micro-restorative opportunities that align with Attention Restoration Theory (ART) in high-stimulus school environments. In dense urban schools where horizontal space is scarce, vertical gardens offer a viable spatial strategy. Rather than serving merely as aesthetic decoration, living walls function as active building systems that regulate indoor environmental quality (IEQ). They introduce complex biophilic textures into otherwise sterile circulation areas, providing acoustic buffering and visual relief.

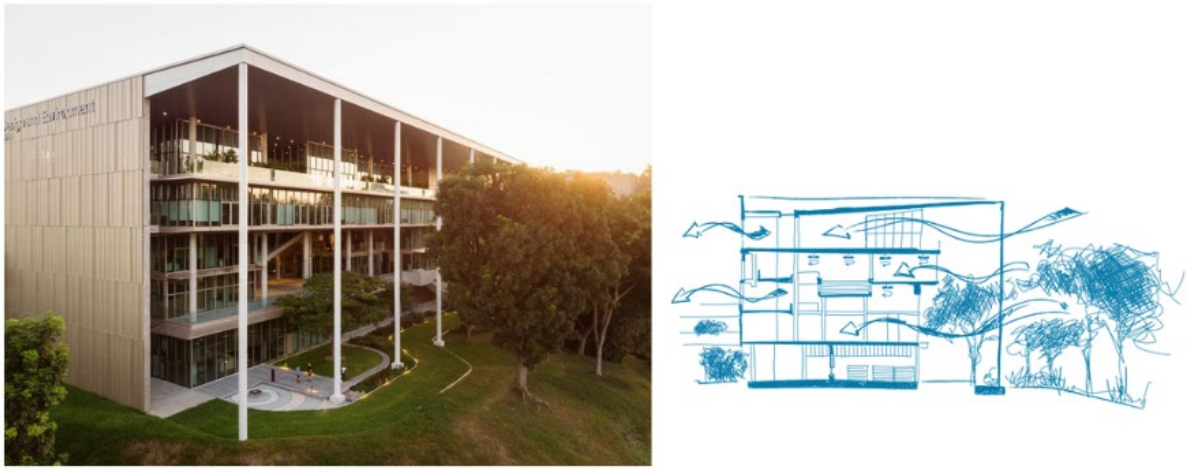

Figure 1. School of Design and Environment 4 (SDE4), Singapore. The integration of vertical greenery and permeable facades dissolves the boundary between interior and exterior, regulating the microclimate while providing continuous biophilic exposure. (Source: Block 2019)

Crucially, recent data validate the performance of these vertical interventions. A field study by Abdeen and Rafaat (2024) demonstrated that installing green walls in educational corridors and atriums can reduce cooling loads by up to 19.14% and CO2 emissions by 28.43%. This effectively transforms passive transit zones into active climate regulators, enhancing air quality and cognitive focus by mitigating the buildup of volatile organic compounds (VOCs). A prominent example is the School of Design and Environment 4 (SDE4)

in Singapore (Figure 1), where permeable facades and extensive vertical greenery dissolve the boundary between the interior and the tropical environment, maximizing biophilic connectivity.

4.2. Rooftop Gardens

As a manifestation of both direct and indirect biophilic experiences, rooftop gardens create an immersive natural environment. They provide a 'getaway' space that is rich in 'being away' and 'extent', key components of ART, allowing for deeper cognitive restoration than fragmented views of nature. Rooftop gardens reactivate underutilized building footprints, transforming them into open-air 'living laboratories' (living labs). This typology extends the learning environment beyond the classroom walls, offering a flexible spatial configuration that supports hands-on interaction with biological systems. It addresses the urban heat island effect while providing unique opportunities for urban agriculture.

Figure 2. Fuji Kindergarten, Japan. The oval rooftop serves as a continuous, accessible "play-loop," transforming the building footprint into an active pedagogical landscape that encourages unstructured movement. (Source: Hobson 2017)

As exemplified by the Fuji Kindergarten in Japan (Figure 2), where the roof serves as a continuous, accessible play-loop integrated with trees, these spaces merge recreational and pedagogical functions. This integration maximizes the utility of the limited urban footprint, encouraging unstructured play and exploration. Studies suggest that such environments significantly increase students' spatial reasoning and inquiry-oriented engagement during hands-on activities.

4.3. Outdoor Classrooms and Learning Spaces

Outdoor classrooms are the ultimate synthesis of biophilic design and ART. They facilitate a complete fusion with nature, engaging all senses and providing an environment where fascination is inherent and the capacity for directed attention can be comprehensively restored. Outdoor classrooms redefine the physical environment as an active participant (echoing Malaguzzi's 'Third Teacher' concept) in the learning process by dissolving the rigid barrier between 'inside' and 'outside.' These spaces offer spatial flexibility that accommodates diverse teaching modalities, from amphitheater-style lectures to dispersed group work, often constrained by static indoor furniture.

Figure 3. Sidwell Friends School, Washington, D.C. The constructed wetland functions as a "living machine," serving simultaneously as a wastewater treatment system and an experiential biology classroom. (Source: Urban Ecosystem Restorations n.d.)

As seen in the Sidwell Friends School in Washington, D.C. (Figure 3), constructed wetlands act as a tangible extension of the biology curriculum. Here, the landscape serves as a "living machine" for wastewater treatment, allowing environmental stewardship to become a daily, visible practice. Pedagogically, this exposure fosters a "carry-over effect," where students display improved focus and attention spans upon returning indoors after engaging in these naturalized settings.

4.4. Courtyard and Schoolyard Design

Well-designed courtyards serve as accessible, everyday biophilic refuges. Their primary restorative function, guided by ART, is to offer a proximate 'being away' experience during short breaks, effectively mitigating attentional fatigue before students return to the classroom. Courtyards serve as controlled microclimates that offer secure enclosures for socialization and relaxation. Architecturally, they break down the scale of large school complexes, creating manageable zones for small-group interaction. However, the specific typology of vegetation employed is critical for health outcomes.

While open lawns contribute to visual aesthetics, recent quasi-experimental studies indicate that tree canopy coverage is significantly more effective in promoting physical activity and reducing adiposity compared to open grasslands or shrubbery (Wen et al., 2025). Therefore, evidence-based design strategies must prioritize vertical vegetative elements (trees) to create shaded, walkable environments that actively encourage movement, rather than relying on passive, decorative green surfaces.

5. DISCUSSION

The findings presented in the previous section underscore a fundamental shift in the conception of educational architecture: from static containment to dynamic, restorative ecosystems. By analyzing specific green typologies, it becomes evident that the integration of nature is not merely a supplementary aesthetic feature but a core structural determinant of student health and pedagogical efficacy. This section synthesizes these observations to evaluate the broader architectural, educational, and urban implications of resilient school design, positioning the "green school" as a necessary response to the cognitive and environmental crises of the 21st century.

5.1. Synthesis of Findings

The review demonstrates that green spaces function not as isolated amenities but as synergistic multi-functional assets. While vertical gardens primarily address physiological needs (IAQ) and immediate

psychological restoration, rooftop and outdoor classrooms facilitate deep pedagogical engagement through experiential learning. Courtyards bridge these functions, offering essential spaces for social regulation.

However, a critical finding of this study is that the mere presence of greenery is insufficient; the typology of vegetation dictates the outcome. While simple turf may provide aesthetic relief, it does not yield the same health benefits as structural vegetation. Aligning with Matsuoka (2010), who found a positive correlation between tree views and performance but a negative one with open lawns, recent data explicitly favor vertical vegetation. As Wen et al. (2025) demonstrate, tree canopy coverage is significantly more effective in promoting physical activity and reducing adiposity than open grasslands. Thus, effective school design must prioritize 'spatial' greenery (trees, canopies) over 'surface' greenery (lawns).

5.2. Practical Implications

For architects and policymakers, the findings suggest a necessary shift from recommendation to regulation:

Design Guidelines: Biophilic principles must be codified into national school design standards. Rather than treating nature as an optional aesthetic add-on, codes should mandate minimum 'green exposure ratios', defining required percentages of visual and physical green contact per classroom unit.

Curriculum Integration: Architecture acts as a facilitator, but not a guarantee. To operationalize these spaces, teacher training must evolve. The curriculum should be designed to flow fluidly between indoor and outdoor environments, ensuring that green spaces are utilized as active pedagogical instruments rather than passive backdrops.

5.3. Urban Challenges and Opportunities

In high-density districts, land scarcity is the primary barrier to implementation. However, this study highlights that "green schools" do not require vast acreages. Innovative uses of verticality and rooftops demonstrate that biophilic connectivity is feasible even within compact urban footprints. Addressing concerns regarding maintenance, Riley (2017) argues that integrating rainwater harvesting systems and selecting climate-appropriate plant species can transition living walls from expensive luxuries to sustainable, self-regulating components.

Furthermore, the role of school architecture is expanding from educational facility to urban resilience infrastructure. As highlighted by recent pilot projects in Barcelona and Paris (Kabuloğlu Karaosman et al., 2023), schools are increasingly being redefined as 'Climate Shelters.' By acting as cooling hubs during heatwaves and safe havens during public health crises, green schools serve a dual mandate: enhancing student well-being while fortifying community resilience.

5.4. Limitations and Future Research

This study is limited by its reliance on a synthesis of existing literature and qualitative case descriptions. While the correlation between greenery and well-being is strong, causal mechanisms require further scrutiny. Future research should focus on longitudinal studies utilizing quantitative biomarkers (e.g., cortisol tracking) and standardized academic metrics over multi-year periods. Additionally, comparative studies across diverse climatic and cultural contexts are necessary to validate the transferability of these biophilic strategies.

6. CONCLUSION

This study establishes that the integration of green spaces in school architecture is not merely a matter of environmental stewardship or aesthetic preference, but a critical intervention for human development. The

evidence presented confirms that green typologies, from living walls to outdoor classrooms, serve as vital infrastructure for psychological restoration, cognitive enhancement, and social equity.

By transitioning from traditional, enclosure-based models to nature-integrated ecosystems, architecture creates a paradigm shift. This shift addresses the modern crisis of "nature deficit" by re-establishing the fundamental link between the learner and the living world. Furthermore, as urban densities rise, these resilient schools extend their value beyond their walls, acting as ecological anchors and potential climate shelters for the broader community. Thus, by consciously reintegrating nature into the heart of school design, we can begin to remedy the modern 'nature-deficit disorder' and build learning environments that are not only instructionally effective but also fundamentally humane. Ultimately, a truly "resilient" school architecture recognizes nature not as a luxury to be visited, but as an indispensable pedagogical partner in the education of the whole child.

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SOCIOLOGY OF DISNEY , AND SOCIOLOGY OF GENDER : NEW MODELS OF YOUNG FEMININITIES , AND YOUNG MASCULINITIES IN DISNEY MOVIES, IN RELATION TO ANIMATED DISNEY ANIMALS

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ABSTRACT

"Contemporary research on girlhood has shown that there are different ways of being a girl. There are multiple ways of living femininity and identifying with femininity" (Kehily 2007: 35).

Postfeminist masculinities, accordingly, are developing inside the feminist idea of gender roles division, and become a progressive, and new Disney model of masculinities(Macaluso 2018:1-4).

Young Femininity in Disney animated movies, are influenced by waves of feminism, there are differences between the roles of Disney's female characters, from the 1937s onwards, compared to its contemporary heroines (Merida, Mulan, Moana). The idea of femininity as Disney's transfixion into feminism, in the era of post-feminism, influences gender equality to become representative in the media.

Sociology of Disney, as one of the new sub disciplines in sociology, with Sociology of Disney animated movies, Sociology of Disney parks, with the Disneyization of Sociology, is useful strategy of analysis the gender role, and the socialisation, with the Animal Sociology analysis of animated Disney animals, for the Sociology of gender classes.

KEY TERMS: Sociology of Disney, Sociology of Gender, Animal Sociology, Disney's models of masculinities, Disney Princesses, Disney Animalities/Disney Animated Animals

INTRODUCTION

Young femininities and masculinity

Disneyification, as a sociological concept, investigates the influence of Walt Disney Company products, on the environment, and identities. Developing the professional Disney princesses, and heroines, and princes/heroes, influenced celebration of their brand, in the Disney Parks, worldwide. Sociology of Food, and the food production, from the multicultural standpoint , in opening the restaurants, in the Disney parks, that offer the multinational food variety, that Disney animated characters eat, influenced the advancement of the interdisciplinary of research in the field.

Postfeminist masculinities, accordingly, are developing inside the feminist idea of gender roles division, and become a progressive, and new Disney model of masculinities(Macaluso 2018:1-4), and

"Contemporary research on girlhood has shown that there are different ways of being a girl. There are multiple ways of living femininity and identifying with femininity" (Kehily 2007: 35).

Sociology of Animals/Animal Sociology, as a sub discipline of sociology, has been founded in 1970-ties. Disney imaginary involves plurality of nationality, and variety of animal species found all over the world. Early and new animated Disney princess involve appearances of animalities, or transformation human-animal, raging from crocodiles, dragons, lions, sharks, to small, and domestic animals. Animals are especially celebrated animation inside the songs, in the Disney animated movies. Dragons, and crocodiles are present inside the animated Disney movies, in all of the evolution of the princesses periods, from Maleficent, Tarzan and Jane, Frog princess, to Mulan, and Raja.

EMPIRICAL RESEARCH

Empirical Research on Disney new masculinity and femininities vs.an old ones, was conducted during the May, 2025, Summer Semester, at Faculty of Political Sciences, inside the Sociology of Gender I classes, at the Department of Sociology, at Sarajevo University, Faculty of Political Sciences Sarajevo, with the discussion of the questions.

Question 1.Feminism, and Disney

Do Disney's animated young femininity promote an emancipated feminist model of femininity? YES NO

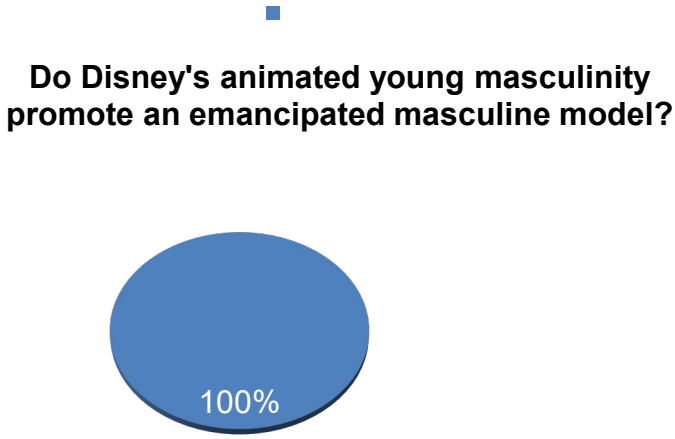
All of the students, 100%, responded positively, Disney's animated young femininity promote an emancipated feminist model of femininity.

Question 2. Masculinities and Disney: new masculinities

Do Disney's animated young masculinity promote an emancipated masculine model?

A)YES B)NO

Graph 1. Do Disney's animated young masculinity promote an emancipated masculine model?



Question 3. Disney and Animality

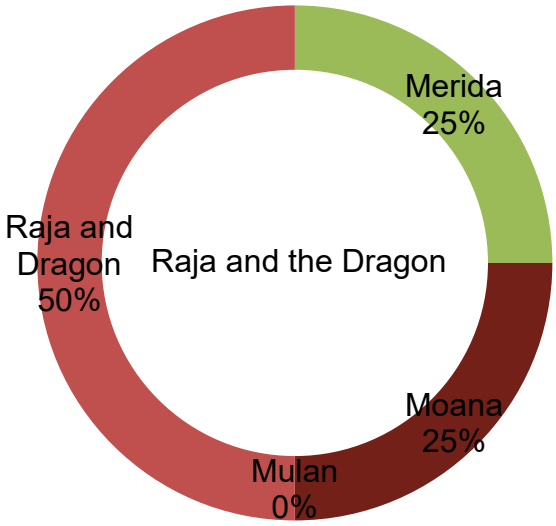
On the questions about the depiction of the animality inside the new Disney princesses, and the reappearance of the same animality, the students did not show more interest, than onto the young femininities, and masculinities. Students of both genders, showed the highest interest into answering the questions, exclusively about young Disney animated princesses. (Photo 1. Disney, Zootropola,

https://share.google/7ecNNq2hgoAL9Cbr0)

Question 4. Which Disney young femininity, in your opinion, best portrays young femininity of the modern era?

Graph 2. The best portrayal of the new young femininities

The best portrayal of the new young femininities, for the 50% of the students, is formed in the Raja.



CONCLUSION

The research results, on the theme of new/old animated Disney, displayed that there is extremely higher interest in the animated princesses, characters occupations and roles, than in the Disney animated masculinities. The opinions on the importance of the new Disney animated princess is that 100% of students confirmed that Disney's animated young femininities, and Disney animated masculinities, do promote an emancipated feminist model of femininity, and emancipated model of masculinities. Feminism, and empowering of the women, and girls, with the emphasis on the evolution, of gender role of women, in creating new Disney young femininities, with the new professional occupation, and breaking the obstacles of discrimination, inside the occupation, traditional, entitled as male only occupations.

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BEING BRUTALLY HONEST: ACTING, LIVING, AND RESISTING IN TODAY'S ARCHITECTURAL CONDITION

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ABSTRACT

In recent years, the disillusionment with architecture has moved away from the built projects themselves towards the conditions of their production: precarious, dominated by neoliberal system, and radically distant from persistent heroic narratives. Following Manfredo Tafuri, it is possible to look at contemporary practice through a historical lens: how architecture, while pretending to be an agent of social revolution, is in reality instrumentalized by the capitalist system as a means of commodification.

In this regard, an attitude that could be described as 'brutal honesty' implies a critical lucidity that rejects any aestheticization of the professional condition while exposing various constraints that shape current architectural production. Such a position is expressed, directly or indirectly, by architectural theorists and practitioners such as Pier Vittorio Aureli, Douglas Spencer, Arno Brandlhuber and BRUTHER.

This brutal honesty challenges the accepted role of architects as autonomous designers and reveals the vulnerability of their position, subject to bureaucratic and neoliberal constraints. This implication is first physical in the condition of the modern body, then cultural and normative, and finally exposed in built projects. Architecture manifests this approach by highlighting the dominance of legislative frameworks, as well as the socio-political and economic power that enables design process, while remaining critical and compromising within existing systems.

Yet, as Tafuri warned regarding architectural ideologies, such lucid criticism runs the risk of being absorbed by the very system it intends to criticize. In response, Aureli calls for a return to the life and body of each individual as a primary site of renewed creativity, an *ars vivendi* wherein creative autonomy commences with a poignantly new configuration of the self. Byung-Chul Han's critique of the "*burnout society*" also underlines the necessity of resisting the relentless imperatives of perpetual productivity.

This essay examines brutal honesty through the works of BRUTHER and Brandlhuber+, drawing on site visits, interviews and reflections on the current professional situation, enriched by theoretical and philosophical discussions by Tafuri, Aureli, Han and others. It argues that brutal honesty acts both as an attitude and an ethical practice: a lucid and demystifying confrontation with the systemic condition and the material reality of architectural production, while being highly sensitive to the current limitations imposed on architectural practice.

KEYWORDS: Brutal Honesty, Contemporary architecture, Neo-liberalism, Manfredo Tafuri, Architectural critique, Architectural production

1. INTRODUCTION

Over the past decade, a growing number of theorists, researchers, critics, and practitioners have begun to vigorously denounce the precariousness inherent in the contemporary architectural industry – affecting working conditions, production mechanisms, and even the very nature of the architectural object (Spencer 2016; Deamer 2020). This direct and often disenchanted speech is part of what could be called an attitude of "brutal honesty": a collective effort to reveal, without detours or rhetorical sublimation, the real conditions in which architecture is produced today. It is an attempt to dispel the romantic or utopian aura which, long inscribed as a tradition of the profession, has masked its profound vulnerability. This increasingly assertive attitude is manifested both in the critical writings of theorists such as Peggy Deamer (2020), Douglas Spencer (2016) and Pier Vittorio Aureli (2013; 2023), but also in the production of practitioners with offices such as Bruther (Stalder et al. 2018) or Brandlhuber+ (Lootsma et al. 2018), whose works and discourses question the very foundations of the discipline.

Brutal honesty first requires re-examining architectural work from a normative perspective that is aware of its own limitations, and adopting a lucidity that rejects any ideological anesthetization. This implies breaking with the fantasized images of the profession — those of an architect-designer who is entirely in control of their production — even though their position has become profoundly marginalized in contemporary context, often supplanted by the growing authority of developers, financial institutions and construction companies (Beech et al. 2024; Cortright 2019, 2021). Architects, reduced to the role of intermediaries, must now contend with a legislative environment that is complex, opaque, rigid, and sometimes contradictory (Chesneau 2023). This legislative inflation has given rise to a production system that not only complicates professional practice, but also alters the very conditions of design, to the point of making the idea of a "creative discipline" difficult to defend (Brandlhuber et al. 2016; Chesneau 2023).

Admittedly, this brutal honesty is not entirely new. In 1977, Charles Jencks had already proclaimed "*the death of modern architecture*" and the failure of its production system dominated by the welfare-state capitalism and monopoly-capitalism (Jencks 1984, 23-37). According to Jencks, this structure had dissociated clients and users, thus accentuating the divergence between the interests of private capital and public value. Even earlier, in the 1960s and 1970s, Manfredo Tafuri sought to demonstrate the decline of the utopian ideals espoused by the "avant-garde" of the time, ideals which—far from opposing capitalism—had ultimately been absorbed by it, contributing to the commodification of architecture and of the architectural idea itself (Tafuri 1979; Hays 1998). Tafuri saw this situation as an insoluble contradiction: the discipline, by essence rooted in the system it claimed to reform, found itself unable to offer any effective alternative. Only a demystifying, non-aesthetic criticism, free from any attempt at self-legitimization, emerging as a "class critique of architecture", based on Marxist principles, grounding in the material conditions of architectural production, could, in his view, open a breach (Hays 1998, 2–35).

If this critical inertia has been able to persist for several decades, it is undoubtedly because periods of economic expansion and dynamism have long masked the profound fragility of the architectural field, lulling the profession into a false sense of stability (Charley 2010). Yet contemporary crises—social, political, economic, environmental—have torn away this veil of illusion. They have revealed the structural insecurity of the architect as well as the vulnerability of architecture, incapable of guaranteeing anything other than aesthetic effects or economic values (Beech et al. 2024, 18-24). The discipline is now faced with a form of exhaustion, even disorientation, which is pushing professionals to confront the contradictions of their own practice. This situation has provoked an awakening—late, perhaps, but necessary—based on a critical lucidity that has become impossible to ignore (Cortright 2019, 2021).

This essay seeks to examine "brutal honesty" as a critical stance and possible form of resistance, drawing on critical analysis and case studies, as well as my own professional experience. My reflection will also take into account the materialization of this attitude in architectural projects, and further, tensions and contradictions that this lucidity may generate, particularly when it risks being absorbed by the logic of capitalism that it seeks to expose.

2. BEING BRUTALLY HONEST ABOUT OUR OWN BODILY CONDITION

One of the most striking aspects of the brutal honesty attitude in the field of architecture lies in a direct awareness of the physical condition of architecture workers. In recent years, a series of research projects, surveys and critical platforms — such as Failed Architecture and Marisa Cortright's publication *Can this be? Surely this cannot be?* (2021) — frankly expose abuses and intrinsic precariousness of the profession. Low pay, excessive overtime, unstable contracts: the same problems recur relentlessly. The profession, long shrouded in discourse emphasizing creativity and cultural nobility, is now being examined through the systemic realities that determine the daily lives of those who practise it.

In this sense, the expression "brutal honesty" first refers to an introspection, sometimes painful, into what it signifies to be a body engaged in architectural work. Highlighting its personal sacrifices and mental fatigue brings the architectural question back to its fundamental source: towards the body that produces and the body that is produced. The discourse from this individual scale is no longer neutral or strictly theoretical; it becomes situated, embodied, marked by lived experience. It asserts a pessimistic yet necessary lucidity about the conditions that the profession imposes and tolerates (Deamer 2020).

This emphasis on the body is nothing new. It is part of a long line of thought that, from Merleau-Ponty's phenomenology (1968) to Juhani Pallasmaa (2005), not to mention Paolo Belardi (2014), has sought to reaffirm the primacy of the body as an instrument of perception, memory and creation. Pallasmaa, for instance, sees the body as the repository of multisensory experiences that fuel our ability to conceive space beyond the simple sense of sight (2005). Belardi, meanwhile, emphasizes that drawing, far from being a purely mental activity, draws on muscle memory and motor intelligence to give shape to thought even before it becomes a concrete representation (2014). Merleau-Ponty, earlier in '*The Visible and the Invisible*', radicalizes this idea: consciousness can not grasp the world through abstraction, but through the thickness of a body that is already engaged in the world. The body, here, more than a medium, is the primary condition of any relationship to reality (1968). This conception of the body has certainly influenced architectural teaching, which has always valued learning through physical experience, gesture, model making and hand drawing. Ideally, through these practices, a bodily memory is constituted, capable of transforming spatial intuitions into architectural visions (Pallasmaa 2022).

However, this sensitivity acquired during training comes up against an environment dominated by a high level of abstraction in professional practice. Today's architects rarely work with materials; instead, they deal with standards, digital models, legal documents, thermal or fire regulations, and financial tables, a scenario that I have personally experienced (Aureli 2023, 207-260; Brandlhuber et al. 2016). The daily life of the practitioner becomes that of a sedentary body, immobilized in front of a screen, absorbed by the logic of management, conformity and optimization. Manual gestures are replaced by coordination. Architecture imagination is saturated by project administration.

This situation produces a striking discrepancy: on the one hand, a discipline that claims to have a sensitive relationship with the world; on the other, a practice in which the body is neutralized and the architect is gradually disconnected from the construction process within the contemporary labour division (Beech et al. 2024, 18-24). This detachment, as Tafuri demonstrated, is part of a process of proletarianisation, and even an alienation of architectural work. By being stripped of the technical skills and material responsibilities that once made the profession valuable as that of a master builder, architects see their room for manoeuvre, their autonomy and even their professional identity reduced (Tafuri 1979; Aureli 2023, 14-15). In this process, the human figure becomes an administered, standardized body, where design becomes synonymous with mastery of various software programmes, and where every form produced is archived in the form of data, under the title of "project," followed by a serial number.

Yet it is not only the body that produces architecture; architecture reciprocally shapes the body that inhabits it. This body is now confronted with countless mundane architectural devices, often unnoticed but "architecturally" performative within the current standard. Laurent Stalder, in the first issue of *Dixit*, co-written with the studio Bruther, shows in his essay "*Something Modern*" how seemingly insignificant

elements, such as the invention of the revolving door, produce a "modern body" by regulating everyday micro-gestures.The revolving door not only radically separates the interior and exterior in terms of air circulation: it imposes a speed, a fluidity, a discipline of movement that becomes a form of implicit bodily education (Stalder, Bru, and Thériot 2020).

From this perspective, architecture is not solely shaped by the body that produces it; it reciprocally shapes the body that inhabits it. In the current situation, insulation standards, energy requirements, technical devices and comfort systems (heating, ventilation, climate control) all contribute to creating a specifically modern body which is optimized, stabilized, maintained in a comfort zone regulated by technological devices. This modern body is the joint product of legislation and the logic of free market, a system that values performance, efficiency and risk management (Stalder, Bru, and Thériot 2020; Stalder et al. 2018).

Therefore, being brutally honest means recognizing that the primary material of architecture is neither concrete, steel nor space or light — but rather the human body. It means seeing the body as the primary locus where the tensions of the discipline manifest themselves. This acceptance of our own bodily condition which is now "modernized", albeit brutal, appears to be the first step towards a potential reorganization of the architectural condition.

3. BEING BRUTALLY HONEST ABOUT THE PROFESSIONAL CULTURE

After considering our own physical condition, it is necessary to broaden the scope and take an equally lucid look at professional culture, which continues to create an exhausting environment. This culture of exhaustion has deep historical roots. In France, for instance, the expression "*charrette*", which originated in the 19th century at the *École des Beaux-Arts*, perpetuates a mythology of exceeding expectations and high performance. It refers to the sleepless nights preceding the submission of work, with the romantic image of students throwing their drawings onto a cart to be taken to the jury for examination (Raybaud 2020). However, this ritual, which has become a tradition within the architectural community, has gradually been transposed to the professional world without losing its fantastical connotations: in offices, this culture of "*charrette*" continues to justify excess, overload, the blurring of boundaries, and sometimes institutionalized abuse (Danicollaterale 2024).

It was in this context that, in 2019, Marisa Cortright published *Death to the Calling*, a text that quickly became a reference point for many young architects. She proposed abandoning the term "*architect*" in favour of "*architecture worker*" — a way of denouncing the mechanisms of self-exploitation that lie behind the idea of vocation. According to Cortright, it is precisely this belief in calling, that allows the system to demand ever more: more time, more dedication, more personal involvement, without ever offering proportional remuneration or recognition in return (Cortright 2019). This insight culminated in attempts to unionize, such as that of SHoP Architects employees in New York, supported by The Architecture Lobby, a grassroots organization of architectural workers. Although the union was ultimately not created, this movement remains a strong signal: for the first time in a long time, employees of a renowned office sought to use the tools of collective struggle—a sign that brutal honesty towards the profession is taking the form of organized resistance (Frearson and Frearson 2024; D'Aprile and Spencer 2022).

A personal example also illustrates this growing awareness. At the office where I worked, a new contractual clause had been imposed: it required employees to renounce all copyright, prohibiting them from displaying any images or project documents — which is nonsensical in a profession where portfolios are the main tool for career progression and mobility. This clause, which would have reduced employees to interchangeable roles without identity, clearly went against our professional recognition. Faced with such a situation, the entire team refused to sign, at the risk of jeopardizing their employment. This collective decision ultimately forced management to withdraw the clause. This episode, minor in terms of a career but symbolically powerful, reveals the capacity for action that emerges when architecture workers become aware of their condition and decide to oppose it.

But a fundamental question remains: why has this problematic, even toxic tradition persisted for so long? Why have Tafuri's radical and relevant analyses remained marginal in the contemporary discourses (D'Aprile and Spencer 2022)? Why has the profession been slow to recognize its own exploitation? Is Tafuri's sharp lucidity, radically pessimistic, were considered too abstract or too detached from the practitioner's interest? — a practice in which the production of the built object, precisely at the heart of Tafuri's criticism, remains their undeniable *ethos* (D'Aprile and Spencer 2022)? And perhaps, on the other hand, as Byung-Chul Han suggests with regard to the crisis of the neoliberal narrative, today's generations no longer identify themselves with the myths told as part of historical continuity. They no longer see their trajectory as a linear and meaningful narrative, but as a succession of problem-solving in a society where storytelling has become "*storyselling*"—a discontinuous, even nihilistic flow that makes sacrifice all the less justifiable (Han 2024b).

Brutal honesty then becomes a way of breaking with the illusions that structured the profession. It does not seek to embellish, but to tell the truth. It does not aim to protect the image of architectural profession, but to clarify the balance of power that runs through it.

4. BEING BRUTALLY HONEST ABOUT ARCHITECTURAL PRODUCTION

This collective awareness is accompanied by another significant phenomenon: regulation inflation. Architects are now faced with a breathtaking number of regulations—safety, environmental, political, technical—that govern construction with sometimes absurd precision (Brandlhuber et al. 2016; Chesneau 2023). The exhibition *Form Follows Rule*, held in Vienna between 2017 and 2018, offered a dramatic demonstration of this phenomenon: far from "following function," contemporary architecture under legislative domination "follows the rules." ("Exhibition: Form follows Rule" 2017).

For Aureli, this situation is symptomatic of a broader reality: the growth of an increasingly complex society inevitably produces abstraction at every level of its organization, including architecture. Spatial planning criteria, once guided by material concreteness, are now governed by increasingly efficient computational power. In this development, the architectural object is ultimately preceded by abstraction, whose authority is demonstrated by the correlation of state and technocratic capital power (Aureli 2023, 207-260).

Facing this challenge, architects oscillate between resistance and resignation. Bruther and Brandlhuber+, for instance, accept constraints as the source material for their projects, not entirely out of ideological adherence, but because it is impossible to do otherwise. Their work becomes a way of highlighting the contradictions of the system, sometimes in a sarcastic manner (Lootsma et al. 2018; Stalder et al. 2018).

Being brutally honest about the condition of architectural production therefore means recognizing that contemporary architecture is no longer defined solely by its ontological forms or intentions, but by external forces such as the legal, economic and political ecosystem that determines the very possibility of design.

5. BRUTAL HONESTY IN ARCHITECTURAL OBJECTS

If brutal honesty today asserts itself as a critical stance, it also manifests explicitly within architectural objects themselves. My interpretation focuses here on a tendency described by Emmanuel Caille (2020), who analyzes a condition that has become particularly evident in France and which he refers to as "*simple is more*." Formally, this architecture exposes its raw structure, making pronounced use of glass, metal, and other industrial elements. The spatial layout remains simple and direct, avoiding any ostentatious architectural gestures. Close attention is paid to everyday life, the banal, and the valorization of what already exists, akin to the "*As Found*" sensibility articulated notably by Alison and Peter Smithson (Lichtenstein and Schregenberger 2001). Although Caille addresses the French context in particular, similar manifestations appear throughout Europe and even in the United States, as illustrated by Diller Scofidio + Renfro's *Canal Café* installation designed for the 2025 Venice Biennale ("Canal Café" 2025). This analysis

could be deployed across a broad spectrum of practices and projects; however, I propose focusing here on two particularly significant offices mentioned before, in the exploration of this notion of brutal honesty within the contemporary landscape: Bruther, based in Paris, and Brandlhuber+, based in Berlin.

Both offices have produced an extensive body of publications, films, and articles in specialized journals. Their projects have received international recognition and stimulated substantial debate, notably in relation to their academic positions at ETH Zurich (Lootsma et al. 2018; Stalder et al. 2018). Bruther, adopting a deliberately provocative attitude, questions and critiques the overregulated construction system and the conformity it imposes, through machinist architectural projects conceived as collages of fragmented industrial elements (Bru, Theriot, and De Ferrari 2022). Brandlhuber+, for its part, distinguishes itself by a consistently interdisciplinary approach—collaborating, for example, with artist Christopher Roth on the film *Legislating Architecture*—and by its social and political engagement, particularly through the creation of *HouseEurope!* and the research platform *Station+*, both aimed at adapting European legislation on building renovation in response to contemporary crises (Lootsma et al. 2018; "Station+," n.d).

Brutal honesty appears to be the most appropriate term to describe these practices, insofar as they seek no embellishment of the profession and strip away any aura traditionally associated with the image of a creative field. Their limited use of a fetishistic architectural vocabulary—evocative terms such as *genius loci*, rhythm, or architectonics, often prized in professional discourse—is replaced by a lexicon drawn from law, economics, and commerce. Brandlhuber+'s projects, such as Brunnenstraße 9 and Terrassenhaus, are described using words like property, investment, or acquisition ("bplus.xyz Adaptive Reuse Architecture," n.d.), while Bruther openly discusses the impact of rendered images in competitions, comparing architectural practice to a "*combat sport*", a genuine "*game of strategy and balancing act*" in which economic considerations become the fundamental principle of contemporary architecture (Bru, Theriot, and De Ferrari 2022, 4-8).

If this honesty reflects a clear ethical position on the part of practitioner-architects, the aspect of brutality—more subtle—reveals itself through their formal and conceptual expression. In projects such as Terrassenhaus and Brunnenstraße 9, Brandlhuber+ uses legislation and building regulations as generators of architectural form. The Terrassenhaus emerges from a conflict between two urban laws applied to the site: on one hand, the requirement for a commercial building, and on the other, the need for contextual coherence within a residential neighborhood. Various programs—cafés, restaurants, yoga studios, art galleries, or housing—are stacked and organized around large terraces, resulting from a stepped composition at each level (Lootsma et al. 2018, 198-217).

The issue of private property and co-ownership is addressed with particular subtlety: to whom do these terraces belong? How should property boundaries and shared zones be defined and managed? Rather than clarifying these questions, the project complicates them, inviting a reconsideration of contemporary urban life, shaped by complex property legislation. The composition becomes a rhetorical device, prompting the modern body—already discussed in the preceding study—to reflect upon its own daily habits. Rather than conforming the body to norms, the project suggests new ways of living and interacting with others.

In this context, architectural form—emerging from legislation—becomes a demonstrative tool revealing the rigidity of the law, opposing public space (commercial program) to private space (residential). If one can speak of an architectural language, Brandlhuber+'s belongs to a sarcastic register, brutally exposing both the incoherence of dominant legislation and the frugality of architecture confronted with such conditions, in which "non-architectural" concerns take precedence.

Brunnenstraße 9 is an old, deteriorated building, purchased after an investment failure. According to Brandlhuber+, the renovated block reflects its complex context, layered with multiple structural and regulatory superimposition. The result may be perceived as a deliberately fragmented collage of materials—glass, polycarbonate, raw concrete—rendering visible the intricacies of Berlin's regulatory framework. The staircase, deviated and connected to the interior façade, responds to fire regulations while generating a pragmatic aesthetic: appearance becomes a direct expression of constraint, a manifesto of the

"schizophrenia" of regulations, producing an architecture with a schizophrenic appearance (Lootsma et al. 2018, 110-133). As described by Bart Lootsma as "*The Shape of the Law*", the building physically embodies these contradictions and complexities, brutally revealing the tensions between the concrete and the abstract (Lootsma et al. 2018, 21-29). In both projects, Brandlhuber+'s language constitutes a formal critique of the very conditions of architectural production, exposing—sarcastically, whether intentionally or not—the fragile position of the architect, whose role is reduced to giving physical form to prescriptions dictated by abstract norms. At best, the architect may play with these constraints to interrogate the "rules of the game" themselves.

Whereas Brandlhuber+ embodies the position of the weaker party within this power relation, Bruther adopts a more provocative approach by directly confronting architectural norms. Pragmatic though their designs may be, their work stages however the disorder of reality, not to conform to it, but to propose an alternative interpretation (Stalder et al. 2018, 262-275). According to them, contemporary architecture often acts as a camouflage, masking industrial machinery that ensures the comfort of users. Their unveiling, on the contrary, highlights discomfort, non-ecology, and non-economy, thereby inverting contemporary priorities. Sustainability becomes synonymous with non-manifestation, and comfort becomes a matter of social conformity (Stalder, Bru, and Thériot 2020, 3-12).

By challenging these rules, Bruther develops an exhibitionist architecture that foregrounds industrial elements—fans, ducts, electrical boxes—essential to the comfort of modern bodies. Through this gesture, they speak with brutal honesty to architectural users, exposing the source of comfort while highlighting its implicit discomfort. This approach also produces an aesthetic intrinsic to these devices, expressing the movement generated by each mechanism and by human interaction with it, resulting in what Laurent Stalder describes as *Bruther's Machinism* (Stalder et al, 2018, 263-275). Bruther's sarcastic tone interrogates the very *ethos* of architecture, suggesting that it lies beyond the provision of comfort or, rather, of conformity (Stalder, Bru, and Thériot 2020).

The *Maison Julie-Victoire Daubié* residence at the *Cité Universitaire de Paris* exemplifies this approach (Stalder et al. 2018, 190-229). Although a curtain wall provides acoustic insulation, one facade faces directly onto the ring road. This choice foregrounds a radical honesty regarding the building's site while revealing its urban reality: an artificial machine in perpetual motion. The banality of the landscape is thus highlighted, even if it escapes classical aesthetic appreciation, recalling—much like Venturi's reading of Las Vegas—the "elephant in the room": an existing landscape that escapes our attention yet asserts its own undeniable value (Venturi, Brown, and Izenour 1977).

However, such brutal honesty may provoke criticism when the architects' sensibility is imposed on users. The Saint-Blaise sports center illustrates this tension: designed with four façades of varying transparency, it reflects Bruther's characteristic collage. On site, teachers express discomfort with the extensive use of glass and metal, which generates intense cold in winter and excessive heat in summer. The architect's analytical vision of modern comfort thus enters into conflict with the users' lived experience. Paradoxically, children—less sensitive to such issues—enjoy the activities they practice there, largely indifferent to the architecture. This raises a recurring yet fundamental question: Does architecture still possess the capacity to address contemporary problems, or has it become merely a manifestation of ideas or a form of aesthetic expression, far removed from our daily lives?

Byung-Chul Han, in '*The Burnout Society*', intrinsically described the modern individual as highly flexible asset, subject to ever-increasing social demands:

"*In positive terms, such a human being without character is flexible, able to assume any form, play any role, or perform any function. This shapelessness—or, alternately, flexibility—creates a high degree of economic efficiency. […] The more often one changes one's identity, the more production is dynamized. Industrial disciplinary society relied on unchanging identity, whereas postindustrial achievement society requires a flexible person to heighten production.*" (Han 2015, 40-44)

As contemporary architecture adapts to ever-evolving users, does it too become more flexible and polyvalent, even to the point of admiring temporary structures such as scaffolding (Kosmos Architects 2025)? Might spatial composition, seeking simplicity within disorder, then reflect a modern body frustrated and overloaded, on the verge of burnout? This collage of distinct elements, in Bruther's vocabulary, could it not be an illustration of modern life—disoriented, deconstructed, deprived of integral and coherent meaning? And is the aesthetic of movement, as described by Laurent Stalder, not precisely the manifestation of the very pathology of the modern body, compelled to engage in perpetual action in order to produce ever more?

Contemporary conditions, reducing architecture to the management of uncertainty, find their most brutal expression in Bruther's work: comfort and other everyday concerns no longer need architecture anymore, because it no longer provides solutions that satisfy our needs. Ultimately, the practices of Bruther and Brandlhuber+ offer a brutal, at times sarcastic, critique of contemporary reality, while asserting an obvious fragility regarding their own status and those of the architectural object within the very power relations that define this reality.

6. BRUTAL HONESTY SERVING THE CAPITALIST SYSTEM

Although the projects of Bruther and Brandlhuber+ adopt a strongly critical stance, this position remains discreet, at least, never explicitly articulated by the architects when discussing specific projects. This restraint can be explained, on the one hand, by the need to avoid conflicts of interest inherent in their status as active firms, and, on the other hand, by a deeper reality: the architects themselves are compelled to conform to the normative standards they seek precisely to question or subvert (Tafuri 1979; Chesneau 2023). Tafuri had already demonstrated that modern architecture has its very roots in the capitalist system, meaning that any attempt to escape this system becomes a paradoxical movement that would lead to the collapse of the discipline itself (Hays 1998, 2–35).

In the case of Bruther and Brandlhuber+, their architectures critique the norm while simultaneously operating within it in order to exist. This paradoxical operation—producing a critique from within the very normative framework being criticized—unintentionally reinforces the authority of that framework. Worse still, it reveals its creative potential, opening the door to an aesthetic exploitation of the very structures they denounce. Thus, although their work may be interpreted as critical from an academic perspective, the pragmatism required for construction simultaneously participates in the system being critiqued—that of a bureaucratic rigidity born of capitalist organization—on which their projects depend for realization.

With the current *zeitgeist*, these projects confirm the relevance of Tafuri's pessimistic diagnosis: economic profit, now the unquestionable driver of production, reduces architecture to a task of organization, subject to the interests of developers, state bodies, and multinational corporations. Within this framework, if architecture is to be realized, it is almost compelled to subordinate specifically "architectural" question to economic and political imperatives (Tafuri 1979).

Bruther even acknowledges that for some projects, aesthetic and material choices are imposed upon them (Stalder et al, 2018, 6-31). This fragility upon architects' control is openly discussed: the architectural object, produced through a highly constrained process, becomes a direct witness to its context, whether praised or criticized. Therefore, could such architecture devoid of effective control be considered critical by its mere existence—independently of the author's intent, since their intervention is substantially reduced?

Perhaps, in this collage and exposure of pre-existing elements, architecture ultimately becomes a by-product without any inherent intention, resulting from the correlation of divergent interests. In this situation, could the critical dimension attributed retrospectively be nothing more than an intellectual stance adopted by architects to preserve their credibility, ironically contributing to their own marginalization within the production system? This shift from designer to organizer has left the profession disoriented, devoid of clear purpose, forced to cling to a progressive ideal as its last hope of fulfillment—a notion

grounded in the belief that the present situation, in all its difficulty, could become a creative resource based on an ethic of brutal honesty.

This persistent focus—often obstinate—on so-called "architectural" questions, at the expense of a deeper understanding of the context in which we live, already appeared for Tafuri as a sign of regression: a movement that paradoxically strengthens the effectiveness of capitalism, which tolerates no waste and recycles all matter, material or ideological, in the service of its own growth. As he sarcastically puts it:

"*In such a phase as this, one must act to convince the public that the contradictions, imbalances, and chaos typical of the contemporary city are inevitable—that such chaos in itself, in fact, contains unexplored riches, unlimited possibilities to be turned to account, bright and shining values to be presented as new social fetishes.*" (Hays 1998, 29)

Therefore, could the critique invoked by the architectural object still be conceived as a potential driver of renewal? Or, on the contrary, must we accept that, subject to the hegemony of contemporary production conditions, not only has the very idea of utopian planning been absorbed by capital for its own expansion—as Tafuri argued (Hays 1998, 2–35)—but even the critique itself, in demystifying architecture's heroic narrative, has been already instrumentalized by the capitalist system, serving its continuous improvement and self-justification? According to this hypothesis, architecture, already caught within the mechanisms of the system, would be forced to carry out a critique of its own *ethos* in order to survive; not to improve production conditions, but to produce a new narrative capable of responding to the current need of the market. The critique is therefore not aimed at ending the system, but to reinforce its efficiency.

Thus, in this context, could brutal honesty itself become a new ethic adopted by the system, an alternative narrative replacing those it has rendered obsolete? A new style to be fetishized, commodified, and absorbed as another regenerative energy by contemporary capitalism?

The recent work of Brandlhuber+ could then be interpreted as an attempt to escape this vicious circle. According to the group, reclaiming control over architecture now requires engaging directly in the production of laws. Constructing the abstract thus becomes the condition for rebuilding the concrete: a critical lucidity that brutally reveals the reality of the profession. The architect must, in a sense, relinquish the traditional designer-builder role—central to their ethos—to survive in an increasingly constrained environment (Puente 2025).

If this designer role has become a luxury reserved for a minority of "starchitects," their production has only accentuated the commodification of architecture within the capitalist mechanism (Beech et al. 2024, 18-24). In contrast to this routine, the collective approach advocated by Brandlhuber+ seeks active engagement in the legislative field, far removed from the historical practice of architects. Their orientation is particularly evident in the launch of *HouseEurope!*, which mobilizes legislation as a tool for the adaptation and reuse of existing buildings and calls upon European citizens to participate in redefining regulation frameworks for the built environment (Puente 2025).

Can we imagine that such an approach might genuinely challenge neoliberal hegemony? Or is it more likely, conversely, to further strengthen the power of the legal norms structuring the neoliberal world? The answer can only be determined in the future, once this ongoing movement produces an explicit outcome, revealing its success or failure.

8. CONCLUSION - BRUTAL HONESTY AS THE PERSONAL *ARS VIVENDI* OF RESISTANCE

In "*Less is Enough*", Pier Vittorio Aureli argues, with a sincere compassion, that workers in the creative industries today are subjected to a form of imposed asceticism. Their precarity, far from being accidental, is the direct product their self exploitation encouraged by the neoliberal system, which fetishizes and commodifies the "less is more" mantra along with all the ideologies that stem from it (Aureli 2013).

While Tafuri expresses radical pessimism regarding architecture's capacity to carry a revolutionary project, Aureli attempts to articulate a possible redemption. For those whom industry has alienated, standardised and exhausted, he proposes a return to the source of creativity: towards one's body, one's very way of life as the most important work of its creator. The *ars vivendi* thus becomes a form of resistance, an existential repositioning allowing the creative act to detach from consumerist logic (Aureli 2013, 55-66).

This proposal resonates with the argument Byung-Chul Han levels at the *vita contemplativa*. Drawing on Hannah Arendt, Han contrasts the *vita activa*—today reduced to perpetual agitation, the imperative of movement, efficiency, and performance—with a *vita contemplativa*, a state of inactivity that enables profound, sensitive, and meaningful reflection. Reconfiguring one's way of living thus becomes a prerequisite: only a work emerging from a body freed from the injunctions of incessant activity can regain true force of revelation, persuasion, and sensitivity—an "*aura*" in Benjamin's sense (Han 2024a). Gombrich's famous assertion—"*There is no such thing as art. There are only artists*"—can also be read in this light: it emphasizes that individual life constitutes the primary source, the first territory of all art creation (Gombrich 1950).

In practice, resisting the current system may therefore entail an act of renunciation, or rather, non-action. The example of Dogma, architecture firm founded by Aureli and Martino Tattara, is instructive in this regard. Over more than twenty years, most of their projects have remained unrealized proposals. Yet this withdrawal is neither due to incapacity nor a refusal of reality: it corresponds to a deliberate stance (Cecilia et al. 2021).

Their graphic production, while occasionally dreamlike or desirous, makes no claim to the spectacular utopia imposed by the architect as author. Rather, it proposes alternative possibilities for genuine collaboration between proletarianized architects and others: ways of living differently, escapes from the game imposed by current structures (Cecilia et al. 2021; Aureli 2023, 254-260). Their distance from the conventional architectural production system—which perhaps explains the non-realization of many of their projects—allows them to prioritize research and critical reflection on the discipline. This coherence between their practice and the life they choose to lead constitutes, in itself, a form of *ars vivendi*.

For architecture, resisting this condition requires acknowledging the commodification to which we subject our own bodies—and, by extension, the bodies of others, including those of the users for whom we design. As long as architecture is emerged from a body that experiences itself as an "asset," it can only reproduce the same logic toward others.

It is therefore by transforming our own body—and our life—from a mere productive "asset" into a genuine creative source that architectural production can become a process of creation rather than oppression. Brutal honesty, by introducing critical lucidity into this awareness, can only remain an individual attitude, rather than a creative source. Without this vigilance, brutal honesty risks being immediately absorbed, valorized, and sublimated by the very system it seeks to critique—just as "*less is more*" was commodified by capitalism, as Aureli demonstrates (Aureli 2013).

Brutal honesty should thus be understood primarily as a personal refusal, a non-collaboration with the dominant logic of production. It is not a remedy, nor a final goal: it constitutes an initial step, a starting point toward constructing a life that is truly meaningful for each of us. It calls for responsibility toward oneself and one's own body. In this sense, brutal honesty cannot serve as a collective political tool, but as an individual *ars vivendi*, defining one's own life as an *œuvre* rather than a project.

Figure 1. Bruther, Cultural and Sport Center Saint-Blaise, personal visit and interview with users.

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TOWARD REGENERATIVE ARCHITECTURE IN TORONTO: REFRAMING SUSTAINABILITY THROUGH CULTURE, COMMUNITY, AND PLACE

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ABSTRACT

Toronto's architectural landscape increasingly reflects a commitment to sustainable design, with green buildings and environmentally conscious planning shaping the city's development narrative. However, dominant approaches to green architecture often prioritize technological performance and environmental metrics, while overlooking cultural specificity, social equity, and community engagement. This paper critically examines the limitations of conventional sustainability frameworks in Toronto's built environment, arguing for a regenerative approach that integrates ecological ethics with place-based identity and inclusive design practices. Using The Bentway as a touchstone project, the analysis explores how architecture can evolve beyond performance-based sustainability to foster resilience, cultural continuity, and meaningful relationships between people and place. In doing so, the paper contributes to a growing discourse on regenerative design as a holistic and culturally responsive alternative to conventional green building paradigms.

KEYWORDS: Regenerative architecture, Sustainability, Cultural identity, Urban design, Community engagement

1. INTRODUCTION

Toronto has emerged as a prominent site of sustainable urban development, with green architecture increasingly shaping its built environment. From high-performance buildings to adaptive reuse projects, the city's planning ethos reflects a growing commitment to environmental responsibility. Municipal frameworks such as the Toronto Green Standard (TGS) have institutionalized sustainability, encouraging developers to integrate energy efficiency, stormwater management, and low-carbon materials into their designs (City of Toronto, 2023). These initiatives align Toronto with global efforts to mitigate climate change through architectural innovation and urban resilience (Beatley, 2011; Lehmann, 2010).

However, as green design becomes more prevalent, a critical tension emerges: sustainability in Toronto is often framed through technological metrics and environmental performance, while the cultural, social, and ethical dimensions of architecture remain underexplored. Buildings may achieve impressive energy ratings, yet fail to reflect the identities of the communities they serve or foster meaningful connections to place. In this context, sustainability risks becoming a narrow technical exercise rather than a holistic design philosophy (Mang & Reed, 2012).

This paper argues for a shift from conventional green architecture toward a regenerative framework—one that integrates ecological ethics with cultural specificity and inclusive participation. Regenerative design moves beyond minimizing harm to actively restoring ecological systems and strengthening social relationships. It asks not only how buildings perform, but how they contribute to the emotional, cultural, and civic life of a city (Lyle, 1994; du Plessis, 2012).

To explore this shift, the paper uses The Bentway—a linear public space beneath Toronto's Gardiner Expressway—as a touchstone project. While not a conventional building, The Bentway exemplifies how architecture can engage with urban infrastructure, cultural memory, and community programming to foster a more inclusive and place-sensitive form of sustainability. This analysis combines theoretical critique with case study methodology, drawing on visual documentation, policy review, and cultural programming to evaluate regenerative principles in practice. By situating this project within broader debates on green design, the paper examines how regenerative architecture might reshape Toronto's urban future—not just through innovation, but through empathy, complexity, and care.

2. THE LIMITS OF MAINSTREAM GREEN ARCHITECTURE

Green architecture in Toronto has become synonymous with technical innovation and environmental performance. Buildings are increasingly designed to meet standards such as LEED certification or the Toronto Green Standard (TGS), which emphasize metrics like energy efficiency, water conservation, and carbon reduction (City of Toronto, 2023). These frameworks have undoubtedly advanced the city's environmental goals, encouraging developers to adopt low-impact materials, renewable energy systems, and sustainable construction practices. However, the dominance of performance-based criteria has led to a reductive understanding of sustainability—one that often overlooks the cultural, social, and experiential dimensions of architectural space.

This technocratic orientation reflects a broader trend in global green building discourse, where sustainability is frequently framed as a problem to be solved through engineering and optimization (Guy & Farmer, 2001). While such approaches are essential for mitigating climate change, they risk producing buildings that are environmentally efficient but socially disengaged. In Toronto, this has manifested in a proliferation of sleek, glass-clad towers that meet energy targets but offer little in terms of public engagement, cultural expression, or community identity. The aesthetic language of sustainability—minimalist facades, green roofs, and smart technologies—has become a visual shorthand for progress, yet often fails to resonate with the lived realities of diverse urban populations.

Moreover, mainstream green architecture tends to privilege the perspectives of developers, architects, and policymakers, while marginalizing the voices of residents and local communities. Public consultation

processes, when they occur, are frequently limited in scope and impact, resulting in designs that reflect institutional priorities rather than grassroots needs (Anguelovski, 2016). This disconnect is particularly evident in neighborhoods undergoing rapid redevelopment, where green buildings are introduced as symbols of renewal but contribute to displacement and gentrification. For instance, in Regent Park, Toronto's oldest public housing community, sustainability-driven revitalization has led to LEED-certified buildings and improved infrastructure—but also to rising property values, reduced affordability, and the erosion of long-standing community networks (LeadingGREEN, n.d.). In such contexts, sustainability becomes a tool of aesthetic and economic transformation, rather than a means of fostering equity and inclusion.

The emphasis on quantifiable outcomes also obscures the qualitative aspects of sustainability—those that relate to memory, identity, and belonging. Architecture is not merely a technical artifact; it is a cultural medium that shapes how people experience and relate to their environment. When green design ignores these dimensions, it risks reinforcing a homogenized urban landscape that prioritizes efficiency over empathy. As Mang and Reed (2012) argue, truly regenerative design must engage with the "whole system," including the social and cultural contexts in which buildings are embedded.

In Toronto, the challenge lies in expanding the definition of sustainability to encompass not only ecological performance but also cultural relevance and civic engagement. This requires a shift in both design practice and policy discourse—one that recognizes architecture as a relational and ethical endeavor. Without such a shift, green buildings may continue to proliferate, but their capacity to foster resilient, inclusive, and meaningful urban environments will remain limited.

3. TOWARD REGENERATIVE DESIGN: THEORY AND ETHICS

While mainstream green architecture focuses on minimizing environmental harm, regenerative design seeks to restore and enrich the ecological and social systems in which buildings are embedded. It represents a paradigm shift—from sustainability as damage control to sustainability as active healing. This approach is rooted in systems thinking, ecological ethics, and a relational understanding of place, challenging architects to design not only for performance but for meaning, resilience, and reciprocity (Mang & Reed, 2012; du Plessis, 2012).

Regenerative architecture draws from ecological design principles first articulated by thinkers such as John Tillman Lyle, who emphasized the need for built environments to function as extensions of natural systems (Lyle, 1994). Rather than isolating buildings from their surroundings, regenerative design encourages integration—of water cycles, biodiversity, energy flows, and human activity. It also foregrounds the ethical dimension of architecture, asking how design can contribute to the well-being of both human and non-human communities.

Central to this framework is the concept of "place-based design," which recognizes that sustainability must be culturally and geographically specific. As Reed and Brown (2009) argue, regenerative design begins with an understanding of place—not just as a physical location, but as a living system shaped by history, ecology, and community. In the context of Toronto, this means acknowledging the city's layered identities, including its Indigenous heritage, immigrant narratives, and evolving urban fabric. Architecture that ignores these dimensions risks perpetuating a generic and placeless aesthetic, even when it meets environmental standards.

Ethically, regenerative design challenges the anthropocentric assumptions of conventional architecture. It calls for a shift from human-centered utility to ecological stewardship, where buildings are seen as participants in larger systems of care. This perspective aligns with Indigenous worldviews that emphasize interdependence and relationality—values that are increasingly recognized in contemporary design discourse (Whyte, 2018). In Toronto, where Indigenous land acknowledgments have become common in public institutions, there remains a gap between symbolic recognition and material integration.

Regenerative architecture offers a pathway to bridge that gap, embedding cultural ethics into the very fabric of the built environment.

Moreover, regenerative design is inherently participatory. It resists top-down planning models and instead invites collaboration with communities, stakeholders, and local ecologies. This participatory ethos is not merely procedural—it is epistemological, recognizing that knowledge about place and sustainability is distributed across diverse actors and experiences. In practice, this means engaging residents not only in consultation, but in co-creation, allowing architecture to reflect collective values and aspirations.

In sum, regenerative design offers a compelling alternative to the limitations of mainstream green architecture. It reframes sustainability as a relational and ethical practice, grounded in place, culture, and community. For Toronto, embracing this paradigm means moving beyond metrics and certifications toward a deeper engagement with the city's ecological and social complexity.

4. TOUCHSTONE CASE STUDY: THE BENTWAY AND THE POLITICS OF PLACE

The Bentway, a linear public space developed beneath Toronto's Gardiner Expressway, offers a compelling example of how regenerative design principles can be applied beyond traditional buildings. Conceived as a cultural corridor and civic commons, The Bentway transforms a neglected infrastructural void into a vibrant site of public life. While not a green building in the conventional sense, its design and programming reflect a broader ethos of regeneration—one that engages with place, community, and ecology in nuanced and participatory ways.

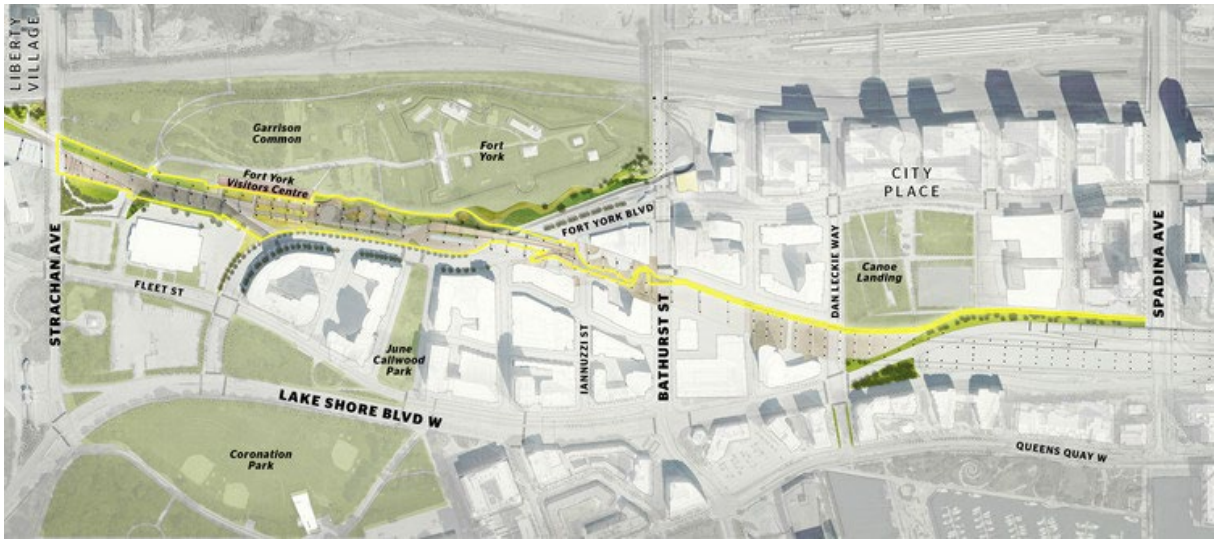

Figure 1. Site plan of The Bentway highlighting zones of public activity, green space, and adaptive reuse beneath the Gardiner Expressway (The Bentway Conservancy. 2023. Site Plan Archive. https://www.thebentway.ca.)

At its core, The Bentway challenges the dominant aesthetic and spatial logic of green architecture in Toronto. Rather than relying on high-tech materials or performance metrics, it reclaims existing infrastructure to create a multifunctional urban landscape. This adaptive reuse aligns with regenerative principles by minimizing new construction and reimagining the ecological potential of underutilized space (Lyle, 1994). The project's emphasis on flexibility, seasonality, and public programming also reflects a dynamic understanding of sustainability—one that evolves in response to community needs and environmental conditions.

Tabel 1. Regenerative Design Principles at The Bentway

Principle	Application at The Bentway
Adaptive Reuse	Repurposing the Gardiner Expressway's undercroft into public space
Community Engagement	Inclusive programming, events, and cultural activations
Environmental Integration	Green spaces, stormwater management, and seasonal adaptability
Artistic Expression	Public art installations, light shows, and Nuit Blanche participation
Year-Round Activation	Ice skating in winter, markets and performances in summer

Culturally, The Bentway engages with Toronto's layered urban identity. Its location beneath the Gardiner Expressway—a symbol of mid-century modernism and car-centric planning—invites reflection on the city's infrastructural history and its impact on public space. By repurposing this contested site, the project foregrounds questions of memory, access, and belonging. Events such as Indigenous-led performances, community art installations, and climate-focused exhibitions demonstrate how design can serve as a platform for civic dialogue and cultural expression (The Bentway Conservancy, 2023).

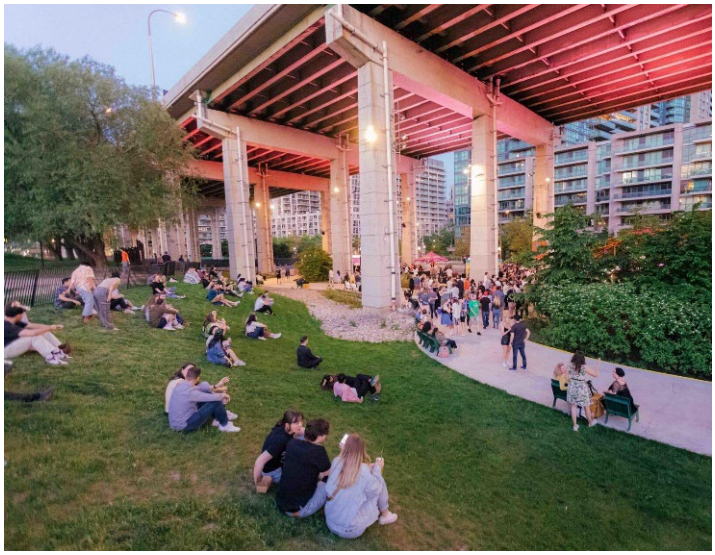

Figure 2. A vibrant community gathering at The Bentway showcasing inclusive programming, public engagement, and adaptive reuse of urban infrastructure

(The Bentway Conservancy. 2023. Event Documentation Archive)

Importantly, The Bentway's development process incorporated extensive public consultation and collaboration with local stakeholders. This participatory approach contrasts with the top-down planning models often associated with green architecture, where sustainability is defined by experts and implemented through technical solutions. By inviting diverse voices into the design process, The Bentway

exemplifies how regenerative architecture can foster inclusive urban environments that reflect collective values and aspirations (Anguelovski, 2016).

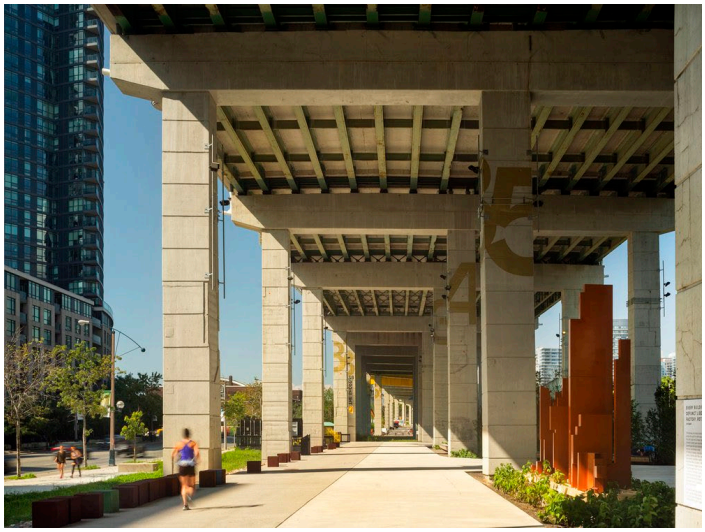

Figure 3. A close-up view of The Bentway's structural elements, showcasing the interplay of concrete, lighting, and adaptive reuse beneath the Gardiner Expressway

(Doublespace Photography. 2023. Courtesy of The Bentway Conservancy)

However, The Bentway is not without limitations. Its location beneath a major expressway presents challenges related to noise, pollution, and accessibility. While the project has succeeded in activating the space, questions remain about its long-term ecological impact and its ability to serve marginalized communities. These tensions underscore the complexity of regenerative design, which must navigate competing demands and imperfect conditions. Yet, it is precisely this complexity that makes The Bentway a valuable touchstone—it illustrates how sustainability can be reimagined not as a fixed standard, but as an ongoing negotiation between people, place, and planet.

Figure 4. The Bentway illuminated during Nuit Blanche, transforming the underpass into a dynamic canvas of light, art, and public gathering (Nuit Blanche Toronto. 2022. Event Archive. https://www.nuitblancheto.ca)

In the context of Toronto's broader architectural landscape, The Bentway offers a counterpoint to the dominant paradigm of green design. It demonstrates that regeneration is not limited to buildings or

technologies, but can emerge through creative engagement with infrastructure, culture, and community. As such, it invites architects, planners, and policymakers to expand their understanding of sustainability—to see it not only as a technical goal, but as a relational and ethical practice rooted in place.

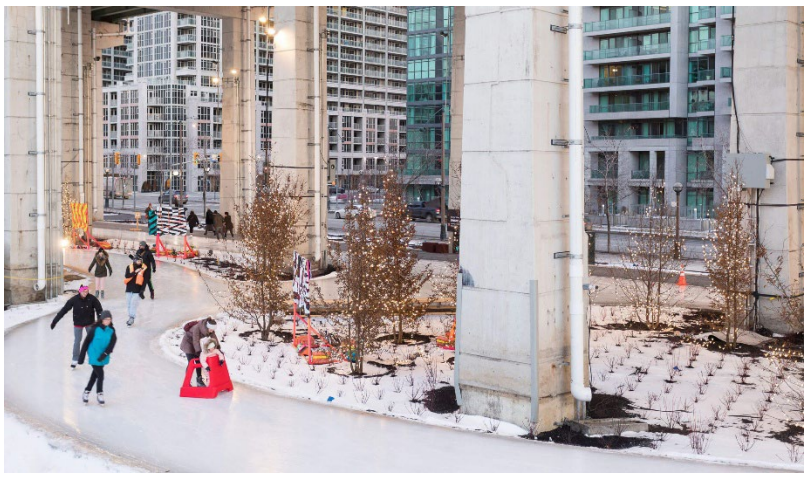

Figure 5. The Bentway reimagined as a winter wonderland, featuring an ice skating trail and festive programming that adapts the space to Toronto's cold season

(The Bentway Conservancy. 2023. Winter Programming Archive)

5. POLICY, PARTICIPATION, AND THE FUTURE OF GREEN ARCHITECTURE IN TORONTO

Toronto's commitment to sustainability is codified through a range of municipal policies, most notably the Toronto Green Standard (TGS), which outlines performance requirements for new developments in areas such as energy efficiency, air quality, and stormwater management (City of Toronto, 2023). These standards have played a critical role in advancing environmental goals and aligning local development with global climate targets. However, as the city continues to evolve, there is growing recognition that policy alone cannot deliver holistic sustainability. The future of green architecture in Toronto depends not only on technical compliance, but on the integration of cultural relevance, community agency, and ecological ethics into the design process.

One of the key limitations of current policy frameworks is their emphasis on quantifiable outcomes. While metrics are essential for accountability, they often fail to capture the qualitative dimensions of sustainability—those related to lived experience, cultural identity, and social cohesion. For example, a building may meet energy performance standards but remain inaccessible to low-income residents or disconnected from its surrounding community. In such cases, sustainability becomes a matter of compliance rather than care, reinforcing a narrow and exclusionary vision of urban development (Anguelovski, 2016).

To address these gaps, Toronto must expand its policy discourse to include participatory design and community-led planning. This involves rethinking the role of public consultation, which is often treated as a procedural formality rather than a substantive engagement. Genuine participation requires creating spaces where residents can shape the vision, values, and priorities of architectural projects. It also demands a recognition of diverse forms of knowledge, including Indigenous worldviews, immigrant experiences, and local histories, which are frequently marginalized in mainstream planning processes (Sandercock, 2003).

In response to these challenges, recent planning initiatives such as the Expanding Housing Options in Neighbourhoods (EHON) program reflect Toronto's effort to diversify housing forms and promote more inclusive urban development. By legalizing multiplexes and encouraging mid-rise density along transit corridors, EHON aims to address affordability and intensification while aligning with broader sustainability goals (City of Toronto, 2025)

The Bentway offers a glimpse into what such participatory and culturally responsive design might look like. Its development was guided by extensive community input and a commitment to public programming that reflects Toronto's pluralistic identity. While not perfect, the project demonstrates how sustainability can be reframed as a civic and cultural endeavor—one that invites collaboration, fosters belonging, and responds to the complexities of urban life. Scaling this model across the city would require not only policy reform, but a cultural shift in how architects, planners, and institutions understand their roles.

Moreover, the future of green architecture in Toronto must grapple with the realities of climate justice. As the impacts of climate change disproportionately affect marginalized communities, sustainable design must be aligned with equity and redistribution. This means prioritizing affordable housing, accessible public spaces, and infrastructure that supports resilience in vulnerable neighborhoods. It also means challenging the commodification of sustainability, where green features are used to market luxury developments rather than serve collective needs (Checker, 2011).

Ultimately, the path forward lies in bridging the gap between policy and practice, between metrics and meaning. Toronto has the tools and frameworks to lead in sustainable design—but leadership requires more than innovation. It demands humility, listening, and a willingness to design not just for efficiency, but for empathy. By embracing regenerative principles and participatory ethics, the city can move toward a future where green architecture is not only environmentally sound, but socially and culturally transformative.

6. CONCLUSION

Toronto's pursuit of sustainable architecture has yielded significant progress in environmental performance, policy innovation, and urban design. Yet, as this paper has argued, the dominant paradigm of green architecture remains constrained by its emphasis on technological metrics and standardized solutions. While these approaches are essential for addressing climate imperatives, they often neglect the cultural, social, and ethical dimensions that make architecture meaningful and resilient.

By introducing the concept of regenerative design, this paper has proposed a more holistic framework—one that integrates ecological ethics with place-based identity and inclusive participation. Regenerative architecture reframes sustainability not as a checklist of efficiencies, but as a relational practice rooted in care, complexity, and co-creation. It challenges architects and planners to consider not only how buildings perform, but how they belong—to communities, to histories, and to ecosystems.

The Bentway, used here as a touchstone project, illustrates the potential of regenerative principles in action. Through adaptive reuse, cultural programming, and community engagement, it demonstrates how design can activate public space and foster civic dialogue. While imperfect, The Bentway offers a model for how sustainability can be reimagined as a participatory and culturally responsive endeavor.

Looking ahead, Toronto's architectural future depends on its ability to expand the definition of sustainability. This means rethinking policy frameworks to include qualitative values, embracing participatory design processes, and foregrounding cultural specificity in the built environment. It also means recognizing that sustainability is not a destination, but an ongoing negotiation—between innovation and tradition, between efficiency and empathy, between the city and its people.

In embracing regenerative architecture, Toronto has the opportunity to lead not only in environmental design, but in ethical and cultural transformation. The challenge is not merely to build green—but to build with meaning.

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AN INTERPRETATION OF ALBANIAN SOCIALIST ARCHITECTURE THROUGH THE LENSES OF TOURISM ARCHITECTURE, MEMORY, AND IDEOLOGY

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ABSTRACT

This study examines Albania's architectural and urban legacy of socialism, investigating into how the nation's collective identity and urban practices remain shaped by the physical, intellectual, and symbolic structures of the communist era (1945–1990). Architecture during this period represented a key tool of social organization and political expression during the 45 years of isolationist rule, exhibiting this way the idealized goals, 'egalitarian' ideals, and control mechanisms of the regime. The architectural environment of socialism, which included everything from monumental structures and communal housing complexes to extensive networks of infrastructure and the numerous bunkers, displayed a tangible representation of national modernity and the state's ideology.

The paper argues that at the same time, architecture produced physical manifestations of ideology under the principles of Socialist Realism. Public art, city designs, and buildings all mirrored the socialist ideas of "national form" and "socialist content," creating an urban environment where both functioned and served politics. With the rise of industrial towns, pragmatic housing, and monumental ensembles; architecture evolved into a complete tool for national identity formation and political education, the pursuit of a national emblem attempted to embody Albanian cultural heritage and national identity. While the religious and pre-communist heritage was eliminated or repurposed in the quest of a uniform ideological image, architecture's communication potency extended to building facades, slogans, and symbolic significance. This "undesirable heritage", currently fluctuates between rejection, sentimental attachment, and reinterpretation, exposing the underlying conflicts between transformation and memory.

The paper then focus on exploring Albania's socialist architectural and urban heritage, highlighting how, throughout Enver Hoxha's regime, the built environment and state-run tourism were both used as instruments of ideological projection. Together, architecture and tourism served as propaganda tools under a regime of rigid isolation, forging a national identity while repressing other forms of cultural expression. This approach was displayed in the first Tourist Guidebook of Albania (Albturist, 1969), which created a meticulously manicured picture of a "New Albania," with each itinerary, photo, and hotel description intended to encourage communist success and limit outside influence. Despite being ostensibly open to foreigners, tourism was carefully planned to support the state's narrative, portraying an idealized Albania rather than its actual social situation. In addition to being residues of repression and "the portrayal" of touristic Albania, the study points out that the tangible remains of communist architecture—from social housing and public buildings to monumental sites—are critical components of Albania's historical continuity which we have yet to fully discover and carefully approach in today's rapidly transforming context.

KEYWORDS: *Socialist Architecture, Ideology, Collective Memory, Tourism Architecture, Touristic Propaganda*

INTRODUCTION

This paper seeks to deliver an exhaustive analysis of Albanian Socialist architecture by linking the architectural influences derived from internal ideology with their imposition on the urban fabric, alongside the external perception of Albania as expressed through its tourism architecture. The two fragments collaborated within the confined context of Albania to reinforce the ideological agenda of the dictatorship. In the contemporary post-socialist era, the controversies surrounding the legacy of this inherited architecture oscillate between identity crisis, memory, and nostalgia, reflecting a reluctance to accept and redefine its role within the urban landscape. This study aims to enhance understanding of the distinctive architectural features of this country within the Balkan context by examining the principal characteristics of the political environment during communism and offering a broader perspective that includes other former socialist nations, thereby illuminating the recent attitudes toward this heritage. The architectural panorama of socialist Albania is one of the most distinctive and ideologically fueled spatial landscapes in the Balkans. Having emerged from the severe transitions in politics that followed World War II with an architectural identity defined by high centralization, official control over cultural output, and an extended time of isolation that was unprecedented in the area. Between 1945 and 1990, architecture served as a vital ideological tool, allowing the Labour Party to explain political principles and create a visual narrative of development, collectivism, and resistance.

POLITICAL AND ARCHITECTURAL INFLUENCES ACROSS THE REGION

While socialist countries in Eastern Europe, exhibited widespread architectural traits, influenced by a cohesive doctrinal framework, the unique political, cultural and regional factors within each state led to distinctions that resulted in a slightly identifiable architectural identity.

Architecture in the Soviet Union was based on Stalinist monumentalism and presented as a clear expression of state ideology. Sustaining in collectivism and projecting power, it produced subsequent prefabricated standard housing, reflecting selective conservation in contemporary contexts. For Countries like Bulgaria, Romania and Albania, this influence was dominant, accompanied by low or no flexibility in design and deviations from the Monumentalism. Bulgaria exhibits a pronounced alignment with Soviet policies, which characterized by extensive panel housing and varying public sentiments. This produced standardized ensembles and rigidity in urban planning, with very few spaces for experimentation. Romania presents a pronounced monumentalism during Ceaușescu's regime, which is also known as autocratic monumentalism. The attempt to generate a version of Nationalism, the urban landscape presents a deep polarization, one related to the construction of enormous structures like the Palace of Parliament, and the limited adaptability and flexibility in architectural design.

Albania on the other hand, exhibits a strict adherence to ideologically controlled socialist realism, marked by significant isolation and a prevalent disavowal of its socialist legacy in contemporary society. The country established a highly rigid and politically restricted architectural landscape. Initially aligned with the Soviet Union, Albania subsequently experienced a phase of severe isolation under Enver Hoxha., which during this period, it was based on heavily utilized socialist realism, monumental classicism, and militarized interventions, exemplified by the construction of numerous bunkers. Architectural creativity was closely aligned with ideological directives, resulting in limited opportunities for experimentation. During the post-socialist era, a significant portion of this architecture is regarded as undesirable heritage, frequently overlooked or at risk of demolition, as illustrated by the discussions regarding the future of the Pyramid of Tirana.

Federal Yugoslavia is notable for its modernist innovations, distinctive monumental memorials, and increased contemporary interest. Serbia, within the context of Yugoslavia, displayes significant architectural experimentation characterized by modernism and structuralism, alongside a diverse approach to socialist heritage, due to its enhanced impact by the international architectural movements of

the time. Yugoslavia, can be considered the rich socialist architectural heritage that includes modernist ensembles and sculptural memorials that are becoming more recognized as important parts of global architectural history and are being rediscovered through preservation efforts, academic research, and cultural tourism. They managed to successfully accept Structuralism *"... not just as an architectural style but as a critical apparatus of thinking about architecture and the built environment ..."* [19].

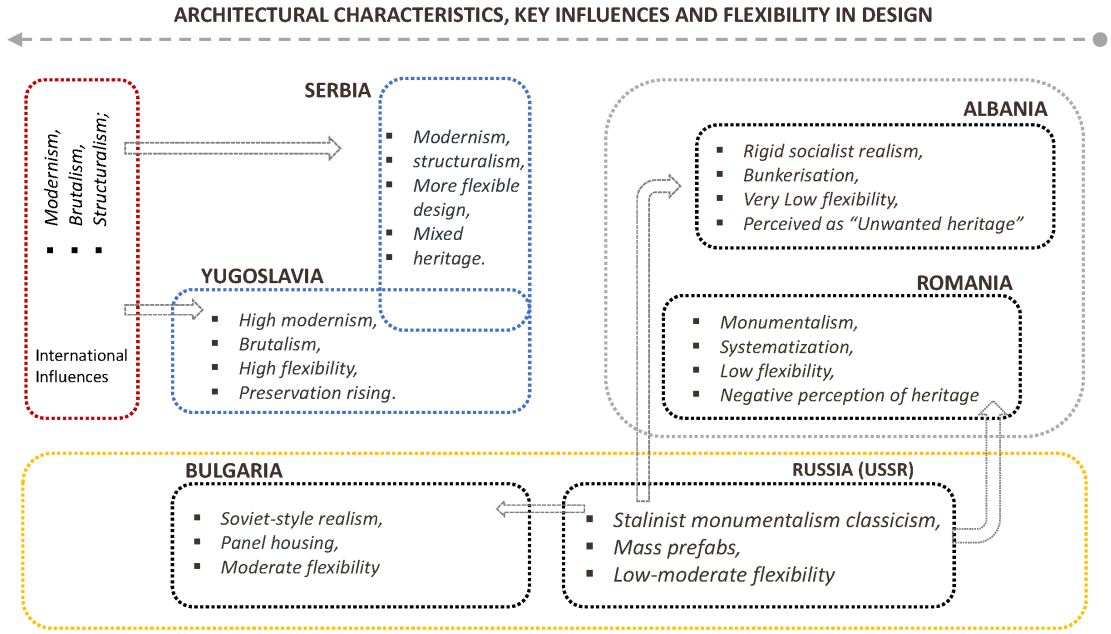

Figure 10. Comparative Framework of Socialist Architectural Characteristics, Influences, and Design Flexibility. Source: Author

This wider perspective on the socialist architecture, presents a clear view on the imposition of the political model in the architectural manifestation with a great influence by the Soviet Union (Fig.1), which shaped the architectural production as well as architectural freedom or lack of in certain countries. In a research perspective, it is undeniable that Albania and Romania have the most controversial communist legacies. This is because many of their buildings are still connected to oppression, surveillance, and extreme ideologies in the collective consciousness. They are perceived as *'carriers of trauma' and reminders of 'collective fear'* [14] which puts pressure on them to be torn down or ignored, in a perpetual dilemma which is directed towards an un-desired heritage.

3. THE MEANING OF SOCIALIST ARCHITECTURE IN ALBANIA

3.1. Behind the Ideology of Albania's dark Communism.

It is commonly recognized that architecture is a social mirror, reflecting and bringing to life the dominant cultural structures and beliefs of the era. According to philosophers like Althusser and Lefebvre the built environment functions as an ideological apparatus that defines and reproduces social consciousness [1] and the social connections are generated by space, which makes architecture intrinsically ideological [13]. Rossi [16] and Halbwachs [9] claim that architecture also serves as a symbol of social identity and shared memory, illustrating how cultures use urban form communicate their social meaning. Bourdieu highlights those spatial arrangements also embody social structures, gender roles and everyday activities [2], while Foucault highlights how architecture may serve as a tool of discipline and power manifestation [6]. In addition, Smith points out that national narratives and symbolic representations are etched into buildings, infrastructures, and urban layouts. Through its forms, symbols, and spatial arrangements, architecture communicates the society's aspirations and objectives as well as its conflicts, contradictions, and power dynamics [17].

This study contextualizes Albania's architectural production within a wider Balkan socialist context, emphasizing regional characteristics and the country's notable isolation, despite previous studies examining dimensions of Albanian communism. The study situates Albania's built environment by initially analyzing architectural trends in socialist and communist governments within the Balkans, where monumentalism, and swift urban development influenced the post-war landscape. In this comparative context, Albania stands out as an anomaly—drawing from both Yugoslav and Soviet paradigms, while markedly differing following political schisms in 1948 and 1961. The study examines the role of architecture as a political tool in socialist Albania, materializing Enver Hoxha's ideological aims. Architecture was not simply a setting for socialist existence; it was essential to the formation of the "New Socialist Man," [15] serving as a propagandistic and organizational instrument. The regime utilized architecture, ranging from housing blocks to industrial complexes, to restructure society, regulate behavior, foster collectivist ideals, and manifest state authority. By talking about Anders' research, Crowley [4] downplays the significance of this architecture as a way to tell history by focusing on the unique effects of communist society.

A critical component to understand the communist regime in Albania, is including the strong anti-religious propaganda. Albania's 1967 designation as the "first atheist state in the world" [21] had a tremendous impact on architectural heritage. Hundreds of religious buildings including: churches, mosques, and tekkes have been bulldozed, repurposed, or deprived of their religious symbols. The eradication of religious buildings helped to redefine national identity, presenting the socialist state as the sole moral and cultural authority. Such strict control over architecture aligns with Castells' argument that the physical layout of cities, serves as concrete manifestations of state authority and communist principles, supporting the assertion that such urban environments function as embodiments of state ideology, influencing social interactions and daily routines [3].

3.2. National Identity and "The National Form"

In this research, the notion of 'Architectural Socialist Heritage' in Albania will be refering to the buildings that were built between 1945 and 1990 for living, transportation, lodging, cultural and social services, hospitals, schools, and various administrative tasks. Socialist Realism was associated with the characterization of the design philosophy of this era, striving to establish an architecture that, while inspired by prior styles, would forge an own identity [11]. This will be accomplished by prioritizing neoclassicism as the preeminent architectural style and integrating the essence of its form. This style, endorsed and promoted by Stalin, significantly influenced Albanian architecture for nearly a decade. Their character, visualization, and capacity to contribute to urban areas, even while refusing style and adopting ideology, have been exploited by the dynamics of Albanian cities, where the layer of communist architecture in Albania is readily visible and perceived. The influence of ideology in architecture peaked in nationalist architecture, characterized by absolute conformism that resulted in buildings with significant contextual impact and exaggerated forms and dimensions. The lack of freedom in aesthetic elements, due to adherence to systemic pressures and political directives, constituted the sole avenue through which architects could be supported in realizing their concepts and projects.

A more profound distinction between Albanian Socialism and other Socialist nations is evident in the resistance to modernity. Modernism was regarded as an expression of capitalism, which was perceived as one of the foreign adversaries of the nation. Viewing modernism ideas as manifestations of capitalism, the concept of the 'enemy' subsequently facilitated control and dictation of the design process. Architects who endeavored to manifest "modernist tendencies" in their creations faced incarceration or other types of punishment. Socialism disintegrated as a geopolitical reality but left an unmistakable map of familiar plans, objects, and shared references, simultaneously establishing urban hierarchy and achieving an absolute 'self-manifestation'. According to Ndreçka & Nepravishta [15] in the contentious perspective on the foundational principles of Modernism—namely "Form" and "Function"—socialist realism emerged through its two

fundamental concepts: *"the national form" and "the socialist content."* The National Form and Socialist Principles are regarded as the principal guiding tenets of architecture during the third phase of architectural expression in communist Albania. The notion of National Form primarily pertained to significant public edifices associated with the dictatorship, hence we mostly find it revealed in the buildings with specific interest like Museums (Fig.2) These structures and buildings that were created for daily usage and for the wider public were not influenced by these prevailing ideals.

Figure 11. From left to right: a) Pyramid of Tirana (ex-Museum of Enver Hoxha), b) Museum of Kruja and c) National Museum of Tirana. Source: wikipedia

The quest for a national form aimed to embody Albanian culture and identity. This shape must be communicated distinctly, while incorporating the socialist message, which provided a challenge within the architectural community, as conveying the socialist philosophy in a tangible form was an ambiguous need. This mandated need necessitated input from professionals, academics, and political figures, including the ruler, to address the development of social content and national form. Reinterpretations of traditional design, ethnographic contributions, and the use of symbols were recognized as components that facilitate the actualization of architecture as a national form, anticipated to be visible, powerful, and distinctly national in character.

4. ARCHITECTURE AND TOURISM AS PROPAGANDA

4.1. The Image of Touristic Albania

After communism took control of Albania in 1944, a new paradigm emerged. The Communist State of Albania began to concentrate on the growth of tourism after realizing that it supported its ideology. Additionally, the Agency "Albturist" [8] was established in 1956 to support this type of assertion. Therefore, considering tourism as a political tool to represent system ideology (Fig. 3) rather than an objective in and of itself, the development of touristic institutions is not a goal in and of itself. The industrial sector and agricultural development became the regime's top interests, which caused tourism to lose ground.

Figure 12. From left to right: a) The "Turizmi" Hotel, Gjirokaster. Source: Albturist 1969, pg. 138. b) (Up) Post Stamp with the visualization of Hotel Apollonia Fier. Source: lastdodo.com. c) (down) Post Stamp with the visualization of Hotel Adriatik Durres. Source: wikimedia commons. d) Rozafa Hotel, Shkoder. Source: Thomai, Nepravishta, & Boriçi, 2019

Additionally, Albania has become even more isolated from foreign tourism strategies as a result of the breakdown of political ties with other socialist nations, such as Yugoslavia (in 1948), the Soviet Union (in 1961), and China (in 1978), in contrast to neighbors like Greece or Yugoslavia, which experienced a more open mindset to the tourism dynamics of the time. The notion of self-perceived pursuit of "Socialism in one Country" [8] was strengthened by these political moves. The Albturist Agency provided a restrictive structure for foreign tourists who were permitted to travel to Albania. This structure was in charge of determining the accommodations, schedule, and services, such as the pre-selection or visa process, in order to ensure control and minimize interaction among outsiders and population, especially the younger one.

The Communist Party of Albania successfully converted all forms and cultural and social settings to serve its dogmatic objectives, thereby reinforcing the regime's rigidity, implementing its principles, and adopting a misguided policy toward the tourism and architectural expression.

4.2. Architecture for tourism

By the early 1970s, the socialist administration recognized the significance of tourism in shaping Albania's 'external image,' which could be achieved through the development of multiple hotels in urban centers. This approach was embraced by contemporary architects as one of the limited opportunities for expression in architecture, given that the 'modernist line' had become established and could be effectively applied in hotel design. Participation in a hotel design group was regarded as a distinctive opportunity for high-rise design [12]. This period can be regarded as a culmination for architecture, devoid of Soviet embellishments and modernist influences. However, the alignment of Socialist Albania with the People's Republic of China in foreign affairs resulted in a decline in architecture and the arts. The limited data and analysis, combined with the unique architectural characteristics of accommodations for tourism, contribute to significant interest in this form of architectural heritage. An integrated study of the tourism sector in Albania is lacking, especially for establishments that have not experienced mass tourism, unlike other socialist nations due to the dictatorship's stance. Touristic accommodations in Albania include beachfront hotels, medicinal hotels, holiday workers' camps, and youth camps. The Hotel “Turizmi,” a representative of city hotels, is notably prevalent in nearly every urban area. A city hotel, like those located in Tirana, the biggest city, illustrates this concept. In communist Albania, urban hotels play a significant role, primarily offering accommodation while also serving as landmarks and shaping the cities' skylines. These hotels were designed for foreign visitors, simultaneously upholding the conditioned image within the framework of ideological tourism. The representation of contemporary and touristic Albania is evident in initial interactions with its cities, as illustrated by postcards, tourist guides, and postage stamps, even though tourism was not a priority for industrial Socialist Albania.

5. BETWEEN MEMORY, REJECTION AND TRANSFORMATION

5.1. The “Unwanted heritage” and Post-Socialist Conflicts

The final state in Europe that eradicated the communist system was Albania. The majority of East European nations took part in the 1989 revolutions, which saw the downfall of dictatorships and the fall of the Berlin Wall. Meanwhile, the most resilient communism in Europe, described as "The Other North Korea" [26] was barely hanging on to its hold at the end of 1990. There is still much confusion surrounding Albanians' relationship with Enver Hoxha's rule because of its severe authoritarianism. One cannot comprehend the physical heritage in isolation from its environment. For this reason, Albanians are still attempting to adjust to and shift the rhythm of a totally different society while also dealing with the "continued living memory" of that system's impact on their lives. The legacy left over from the years of the government has been handled differently by Albanians. First, a number of sociocultural and material parts of society had to be replaced as a result of the coping mechanism of denial and criticism through the deterioration of things, spaces, and attitudes. Another approach has been to *“... totally forget, destroy any memories of the facts and*

buildings of that period "[15]. According to Ndreçka & Nepravishta, Albania now takes a "strange" political approach to the heritage of that period [15] designating them as non-heritage or undesirable. They argue that the different attitudes regarding this heritage, include efforts to erase remnants of the socialist era, identity loss, lack on maintenance and degradation and in some cases complete transformation, rendering buildings "almost unrecoverable". Iacono & Këlliçi, argue that post-communist while Albania while preserving a part of the heritage, such as traditional and nationalist monuments, intentionally ignores or marginalizes some aspects of its legacy, especially those deeply infused with the doctrine of dictatorship [10]. Among the structures that should tend be preserved the least, are prison camps, sculptures, and bunkers. Additionally, Laurajane Smith presented the concept in her 2006 book "Uses of Heritage." Despite how it may initially appear, history is important for maintaining identity balance. The significance of the actual location and memory might be seen as symbolics and an important component in a political negotiation. By virtue of the political presence, a redefining of social and cultural norms in a way that permits and gives people the confidence to assert how their values and viewpoints are expressed uniquely can arise. Furthermore, it is a process or performance where values are assessed, along with memories, cultural artifacts, and social connotations that establish one's identity, feeling a connection to the present and a sensation of inclusion in the particular physical or social setting [18]. Also, Macdonald's (2009), supported the idea that structures and symbols from the socialist era in Albania and other socialist countries (like bunkers, statues, architecture for regime, and more) are considered part of difficult heritage. This produces a reality where material remains of past regimes, like socialist monuments, are abandonded, ignored, or physically demolished when they don't fit with *a "positive, self-affirming contemporary identity"* [14].

Similar to other nations post-communism, Albania has been grappling with the subsequent trauma associated with fear, censorship, and the erosion of individual and community liberties. The physical landscape inherited from the Communist Era, including industrial structures, military facilities, bunkers, prisons, and statues, epitomized the regime's surveillance and authority through its imposing magnitude and positioning. Despite the passage of 35 years since the regime's demise, a pervasive geography of dread and surveillance persists, rooted in the recollection of personal experiences shaped by psychological repression and the unyielding rigidity of the political system.

5.2. A Disruptive Reawakening: Getting involved with Memory and Undesired Heritage

The architectural panorama of Tirana has experienced significant changes following the collapse of the communist system, necessitated by the necessity to address the legacy of buildings that once represented state power, ideological inflexibility, and oversight. The Pyramid of Tirana, the dictator's former residence in Blloku, a system of bunkers now transformed into Bunk'Art, and the vicinity of Tirana International Hotel exemplify critical locations where the conflicts among memory, legacy, and urban development are most evident. The buildings, formerly crucial to the visually and political framework of socialist Albania, have been transformed through reuse and adaptive transformation, or extensive renovation, mirroring changing social perspectives and emerging political perspectives in modern Tirana. As Eaton [5] remarks that the challenge of addressing socialist-era landmarks in Albania is intricately linked to unresolved trauma and disputed memory narratives, which hinder public endeavors to incorporate these sites into a modern identity framework. Their physical presence sustains the concrete memory of authoritarianism, shaping contemporary views of the past and complicating efforts to reconcile historical pain with the imperative to preserve, recreate, or modify elements of this contested architectural heritage into functioning and re-invented spaces.

5.2.1. The Case of the "Pyramid"

What connects all these together is the reaction to this heritage, mostly presented as rejection and inability position this heritage in the historical urban setting. One of the best examples of a controversial, undesired landmark is the Pyramid of Tirana. The building of known as “Piramida”, which initially was built with the purpose to serve as a Mausoleum for Albanian dictator Enver Hoxha, all its lifespan has endured tremendous alterations and polemics. It debuted at 1988 as a Museum for Hoxha, while after the fall of dictatorship in 1991 it has found diverse roles, lingering for 3 decades half dismantled and partially issued, to some extent because its distinctive shape offered challenges to utilize it, but more because what it symbolizes.

Figure 4. From left to right: a) Location of the ‘Pyramid’ in Tirana. Source: google maps. b) Arial view of the Reconstructed Pyramid in 2023. Source: dashart.al and c) View of the Pyramid from the main entrance. Source: pikark.com

aggression and control. Being utilized for cultural and artistic events, the Pyramid has been subject to a reconceptualization and reconfiguration as a new concept which has returned it to the public and becoming a landmark in the city. From 2021 by a project of MVRDV Architects (Fig. 4.b, c) “The Pyramid” has been acting as a center for creative technology, which introduced new activities for the city, while it also converted the exterior of the building as an open public space with terraces, ramps, classrooms, studios, and public plazas [25]. Even though the discussion about approaching this building was continuous and it still goes on, it represents one the cases where the history and symbolism behind the building was confronted, providing a direct example of adaptive reuse in one of the most “unwanted heritages”.

5.2.2. The Dictator’s House

Enver Hoxha spent the last decade of his life in the Block Area, a suburb in south-western Tirana made up of low-rise houses that belonged to the communist elite. The main avenue "Deshmoret e Kombit," once known as the "Cardo" of the country, and the opposing "Gjergj Fishta" boulevard both provide direct access to this area, making it an important aspect of Tirana's urban planning. In case of emergency, the residence has a hidden access to the tunnel that leads to the refugee bunker, a large garden, a library, plenty of private rooms for every resident, and an indoor pool on the lower level. The area's "undesired vibe" continued to influence the area's emotional side in the early 1990s, making people afraid to inquire about the area's inner workings. The neighborhood quickly became the among the most popular spots for young people in the early 2000s, thanks to the influx of restaurants, bars, and shops brought about by the free market. The area's peculiar mix of fear and curiosity made it a popular hangout for young people. Because of this, the land here became more valuable, paving the way for the construction of high-rise buildings—first on the block's perimeter and now inside as well.

The villa's function reconfiguration into a public space is accepted as a crucial step in overcoming the dark periods of Albania's past as it reminds people of the place's terror and highlights the need for Albanians to distance themselves from the terrifying image of the dictator.

Figure 13. From left to right: a) Location of the Dictator's Villa in Tirana. Source: google maps. b) View of the Villa in 2010. Source: intoalbania.com and c) View of the Villa in 2025. Source: kosovotwopointzero.com

As a recent proposal by the Municipality of Tirana, the Dictator's residence is set to be transformed into a "new cultural destination" on the premises (Fig. 6.c). This will serve as both an expression space and a direct counter to the rejection of the dictator. One could wonder if this treatment of this aspect of the communist legacy has been prudent in light of the shrinking windows of the residential villas and the overall shrinkage of the block's interior space; however, the imperative for collective free speech and the dictates of history appears to have predominated.

5.2.3. The Famous Bunkers of Albania

The paper further examines certain expressions of ideology, such as the militarization of the landscape via the "Bunkerisation" program, a deliberate repudiation of adornment and religious iconography, by considering it "The most enduring effect of the 'bunkerisation' of Albania was the creation of what has been defined as a 'siege mentality' [7]. These constructions exemplify the militarization of the environment, serving as a direct manifestation of the regime's paranoia that permeated Hoxha's defense philosophy and altered the Albanian landscape. They functioned not just as protective structures but also as instruments of material propaganda, perpetually reminding inhabitants of external dangers and the necessity for internal alertness. They also represented autarky and self-sufficiencym, the regime's profound mistrust of both Western nations and other communist states. Bunker typologies differed on size and typology; however, all exhibited the ideological sterility and durability characteristic of totalitarian material culture. Kallço (2014) observes that bunkers represented the psychological framework of fear, monitoring, and readiness that characterized the communist Albania of Enver Hoxha. The precise quantity of military bunkers dispersed throughout Albania is still not known. The estimate varies significantly, ranging from approximately 175,000 to almost 750,000 [24] of the subterranean, cement-and-steel, designed to safeguard this nation in Balkan. According to Robert Hackman [22], the number is likely to be closer to 175,000. The cause of this disparity is ominously obscure: The mushroom-like cabins were constructed with strict secrecy throughout the 1970s and 1980s by a dictatorship driven by paranoia.

That was in the past. Today, thirty years after the regime of Communist dictator Enver Hoxha, who governed from 1944 to 1985, locals perceive the ubiquitous bunkers as poignant memories of a challenging history. Interest in such buildings has increased recently. Authorities lack a holistic research and rehabilitation program for these entities. Some structures have deteriorated, while others have succumbed to coastal erosion and have been submerged. Additionally, some have provided refuge for the homeless, while other ones have been incorporated into privately owned properties, cafes, or shops.

The project "Concrete Mushrooms" [23] can be considered the major investigating and tracking initiative regarding the typologies and sizes throughout Albania. Recently collaborative approaches have tackled possibilities on transformation for these structures. Bunk'art Museums (Fig. 7.a) represent governmental strategies to transform these enormous underground spaces into museums, together with the "House of Leaves" in Tirana.

Figure 14. From left to right: a) Bunk'art Museum 2, Tirana. Source: behance.net. b) Bed & Bunker, Lezhë. Source: theguardian.com

They are now a representation of communist history of Albania and part of the cultural portfolio of the city, which attracts thousands of visitors each year. Bed & Bunker on the other hand (Fig.7.b), is an experimental project where youth and universities took the lead to propose a transformation of the internal space of bunker in Lezha seaside, reconfiguring it as a hostel by addressing simultaneously also this fragment of the history to the younger generations.

5.2.4. The Icon City Hotel (Hotel 'Turizmi')

Hotel Tirana, historically recognized by locals as the 15-floor building, has maintained its status as the tallest structure in the city for several decades. The construction of the building was facilitated by contemporary technology in the 1980's (Fig 8.a) contributing to the low-rise architectural ensemble of Tirana's main square. This development marked a major turning point in architecture, impacting the city's skyline. The facility was designed as a hub for various meetings, accommodating diplomatic delegations and diverse activities. The materials selected were carefully considered, with standards and quality prioritized by the architectural team: V. Pistoli, K. Çomo, K. Kolaneci, N. Theodosiark, and M. Pepa.

Following the 1990s, this building underwent privatization to enter the international hosting market as a hotel. Restoration processes occurred from 1994 to 2015, (Fig. 8.b) during which it was adapted into a premier international hotel property. The building's architecture was at first meticulously preserved, with the primary interventions occurring in the lodge and window areas, soon to be replaced with a horizontally continuous window, creating an unexpected contrast between the darker tone of the horizontal continuation of the windows and the structure of the building itself. Till a few years ago, it still preserved the status of prominent landmark adjacent to Skanderbeg Square.

Figure 15. Tirana International Hotel (from left to right): a) The hotel during the 1970's. Source: pinterest.com. b) The Hotel during the 1990's. Source: wikimedia commons. c) The Hotel in 2025. Source: lapsi.al.

The emergence of new high-rise buildings and crowded construction development significantly diminishes the historical prominence of the hotel. The dense development presents a variety of architectural styles, ranging resulting in a visually incoherent skyline (Fig.8.c). The planning rationale from the socialist era, characterized by axis, symmetry, and broadness of the square, is disrupted and the hotel's significance as a landmark from the communist era is diminished as development emphasizes market value, while contributing to a trend of selective amnesia regarding undesirable socialist legacies.

6. CONCLUSIONS

The paper contends socialist architecture of Albania should not be perceived merely as functional or aesthetic creation; rather, it necessitates an analysis as a complex cultural initiative: a mechanism of state propaganda, a vessel of ideological significance, a creator of collective memory, and presently, a disputed stagnation of "undesirable heritage." These buildings are still there today, and they are strong memories of psychological abuse, state-induced anxiety, and structural oppression. Their physical presence keeps the associations of authoritarianism alive, shaping how people think about the past and making it harder to balance the need to remember and protect, reinterpret, or repurpose parts of this controversial part of heritage.

The communist heritage is not adequately integrated into strategic visions, national tourism strategies and the sustainable re-adaptation of these buildings. The heritage in general, including the one for tourism is not today a focal point in broader discussions within scholarly networks or authoritative bodies. Currently, there remains a deficiency in the inclusivity of architectural heritage in analytical processes concerning assets and opportunities; consequently, documentation and formal research on rehabilitation and re-use are still insufficient. The buildings that have been restored or re-adapted lack support from existing investigations on transformation methodologies or comparable cases within the region, which could provide optimal approaches and tools. The interventions discussed in this session are typically conducted by government entities or, less frequently, private initiatives. Regardless of the conceptual framework or design, they emphasize an individual-focused approach to the "target" of intervention, even in the most successful cases.

This method does not qualify as a thorough strategy for several reasons while there is a need for a holistic perspective and an inclusive strategy to evaluate and preserve the social heritage. Its evident that the chaotic public consciousness is still negotiating this unsettled heritage. However, the socialist material heritage—which includes the cultural and architectural heritage—is a legacy that forms an important part of Albanian identity. As such, it must be embraced, researched, and learned in order for people to live in harmony with one another in the city.

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CONTEMPORARY UTOPIAS IN ARCHITECTURE

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ABSTRACT

This paper explores how architectural utopias have evolved from the 19th century to the early 21st century, challenging the widespread belief that utopian thinking vanished with the rise of postmodernism. Instead, it argues that utopia in architecture has not disappeared but transformed its meanings and expressions shifting significantly, especially in contemporary contexts shaped by environmentalism and the concept of the "common".

The study draws on Yona Friedman's theoretical framework, which defines three essential conditions for a utopia to be realisable: it must stem from collective dissatisfaction, rely on known methods or technologies for implementation, and require broad societal consensus. Using this lens, the paper analyzes what makes utopian projects viable, distinguishing between paternalistic approaches, where designers act as external agents, and non-paternalistic ones, where change is initiated from within the affected communities. It also considers the importance of group size, referencing Plato's ideal of 5,040 citizens in The Republic and Fourier's phalansteries designed for 1,500 to 2,000 inhabitants.

The section focuses on three important projects, as: 1) Charles Fourier's phalansterium, the first megastructural response to industrial urban disorder, envisioned as a city of the seventh degree of Harmony; 2) Le Corbusier's Ville Radieuse, a modernist plan for 1.5 million residents, based on Cartesian logic and large-scale spatial organization, and 3) Constant's New Babylon, which reimagines urbanism as a platform for psychogeographic exploration and creative freedom beyond mere functionality. A turning point is identified in the work of Italian Radical Architecture collectives, Archizoom and Superstudio, whose visionary projects shifted utopia toward dystopia. Rather than proposing improved social models, these Florence-based groups offered provocative critiques of capitalist urbanism, reframing utopian discourse as a tool for denunciation rather than aspiration.

The paper concludes by examining contemporary utopian thinking in architecture, which often centers on ecological awareness, especially after the 1972 Limits to Growth report, and on commons-based approaches inspired by theorists such as Hardt, Negri, and Bauman. However, it critically questions the viability of merging architecture with nature, arguing that such visions represent an unrealizable utopia. Drawing on Marcuse's categorization, it suggests that architecture's core function, to shield humans from nature, fundamentally conflicts with the idea of seamless integration, potentially undermining the discipline itself.

KEYWORDS: Architecture, Common, Dystopia, Environmentalism, Utopia.

INTRODUCTION

'She is as the horizon' [...] 'I walk two steps closer, she walks two steps further. I walk ten steps and the horizon moves ten steps further. However much I walk, I will not reach her never. What is utopia for? That's what it's for: to walk.'

Eduardo Galeano

The word 'utopia' was coined in 1517 by the English writer Thomas More (1478-1535) in his book of the same title. It may derive from the Greek word *eutopia* meaning 'good place', meaning a country without social injustice, but also *outopia* meaning 'non-place'. More's Utopia is an island, an economically, politically and socially just place, not present on maps. Because of this 'non-presence' in maps, utopias will be regarded as not applicable in a real context. Before More, utopias were not considered as unfeasible. In the Republic, Plato considers utopia as realizable, the same goes for Christian utopias. Plato's Republic and Christian utopias were considered as realizable if they did not already exist somewhere in the world.

Herbert Marcuse writes in his book *The End of Utopia* that they can be divided into two categories. The first category includes unrealizable utopias, and these are those that go against scientific, biological or physical laws, for example eternal youth or human perfection (Marcuse 1968, 11).

Realisable utopias are those that cannot be realized at the moment, but not because they are unrealisable project proposals, but simply because society is not ready or social conditions are unfavourable for the implementation of such projects (Marcuse 1968, 10).

We can speak in this case of utopias that can be realised under different conditions. Let us now see what these conditions are for realising a utopia, i.e. a project designed to increase the satisfaction of a group of human beings or a community.

A THEOREM

Yona Friedman's "The Theorem of Utopias" published in the essay *Realizable Utopias* begins with the following axiom: "*Utopias are born out of collective dissatisfaction*" (Friedman 2003, 28). In fact, Plato's The Republic was born during the war between Athens and Sparta from the dissatisfaction of the people of these cities, tired of the conditions produced by the long war. Thomas More's Utopia, first published in 1517, twenty-five years after the discovery of America by Christopher Columbus, and the other Renaissance utopias were the result of the unsatisfactory conditions of medieval urban culture in Europe. These conditions of urban decay made evident by the economic and urban possibilities that were available on the other side of the Atlantic. The fact that the narrator of the Utopia, *Raffaele Itoldeo*, was a navigator who had accompanied Amerigo Vespucci on three of the four voyages, but after the last experience he no longer sailed with him. And finally, the utopias of the 19th century, born after the industrial/economic/social revolution, rather than describing ideal communities, denounce the hygienic/sanitary/social conditions produced by the massing of the population in industrial cities. The second axiom is 'utopias can only come into being on condition that there is a known remedy (a technique or a different behaviour) that can put an end to such dissatisfaction'. The existence of an as yet unimplemented technique sanctions the feasibility of a certain project that is considered unfeasible. Because of this inapplicability of existing techniques capable of solving problems, social dissatisfaction arises. For Friedman, realisable utopias are characterized by an anticipation of the techniques that can implement them. Because of this inapplicability of the available problem-solving techniques, collective dissatisfaction arises.

To become realisable, these utopias must have a collective consensus. The consensus given by society transforms the utopia into a realisable project. "*A utopia can only become realisable if it obtains a collective consensus*", is the third axiom of Yona Friedman's theory. As we have also seen in the case of the definition of utopia by Herbert Marcuse, society must be mature and not oppose a project of social transformation. Under these conditions, a utopia is realisable.

According to Friedman (2003) whether a utopia is considered paternalistic or not depends on the author's relationship to the group it aims to help. If the author is not part of the dissatisfied community, the utopia is paternalistic. If the author is part of that community, it's seen as non-paternalistic. Paternalist utopias do not need propaganda to be accepted because the proposal for change comes from individuals/people who are part of the dissatisfied community. It can be said that collective consent is given automatically. The problem arises when dealing with paternalistic utopias because collective consent must be taken for a given project. To be realisable, utopias must be the work of a collective invention and not of individual authors. This is what made the classical utopias, from Plato's to More's, unfeasible.

Another factor that determines the realisability of utopias and the number of people who want to join this society is communication between them. Friedman writes that "*society is constituted by means of communication; the abstractions invented by an individual and transferred to other individuals thus become a common good*" (Friedman 2003, 29). The maximum number of individuals beyond which communication is lost determines the size of the critical group. Utopias can only be realised if the number of individuals in a community does not exceed the threshold of the critical group. Plato's republic had to contain no more than 5040 people, which was the community a speaker could address without having communication problems. The critical group of the republic was 5040 individuals, and communication, in this case, between the speaker and the people, is crucial for life in the community.

Utopian cities present us with an ideal society in its organization and functionality, but always with a maximum and closed number of inhabitants. In the case of the phalanstere, conceived by Charles Fourier, the number of the critical group varies from 1500-2000 people.

In summary, according to Friedman, for a utopia to be realised, the three axioms listed above must be fulfilled, and in addition, the utopia must not be paternalistic and the community must not cross the threshold of the critical group.

THREE PROJECTS

Phalanstere

Charles Fourier's Phalanstere (Fig. 1) is a unique structure that opposes the chaos of the industrial city. In Fourier's historical division of civilization, it is the city of the seventh degree, that is, of Harmony. In the centre of the building were the public 'services': the clock, the telegraph and the carrier pigeons. In the wings, all handicraft and manufacturing work was carried out. All connections took place under cover from the weather through the gallery street on the first level and the stairs. The gallery is triple height and all the rooms in the building overlook it. On the ground floor there are storerooms, workshops and driveways, while in the attic there are water tanks and guest quarters. The common areas for recreation are on the first level and overlook the gallery street. As for accommodation, that is not described in detail, each person or family can choose where to live. Each phalanstere is an autonomous unit, integrating country and city.

The phalanstere is the first idea of the city included in a megastructure that opposes the chaos of the industrial city. This idea anticipates the building city taken up by Le Corbusier in many of his projects. It can be said that the city of the Modern Movement has Fourier's Phalanstere as its archetype.

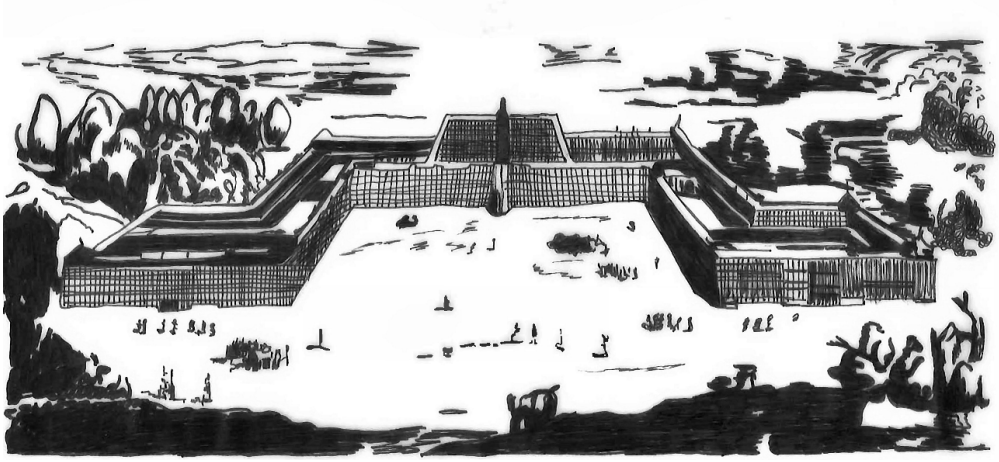

Figure 1. The Phalanstère 1832. Author: Charles Fourier. (Source: re-drawing by Arjela Xhuti).

Ville Radieuse

Le Corbusier's Ville Radieuse is a project for a modern city for one and a half million inhabitants. The starting point is the residence which envisages housing cells juxtaposed to form a macro-building in a line of eleven stores with an indefinite length that bends at right angles following two orientations: east-west orientation with housing facing both sides; north-south orientation with housing only to the south and a perimeter road to the north. The city is constituted by the juxtaposition according to a Cartesian logic of the macro buildings. The modern movement concentrating its attention in particular on the dwelling neglects the space between buildings and considers it as empty.

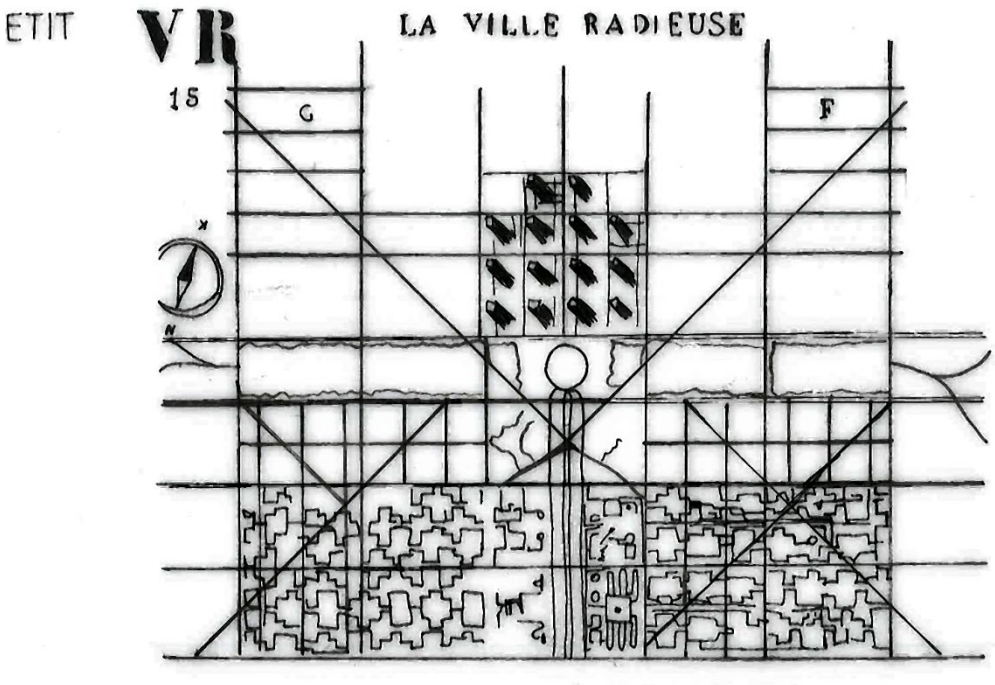

Figure 2. *La ville Radieuse* 1933. Author: Le Corbusier. (Source: re-drawing by Arjela Xhuti).

Generally, this void is filled by greenery. This conception of urban space directly connects the modern city with that conceived by 19th century progressives. Choay (1973) writes that the Ville Radieuse is a transposition of the ideas of the Phalanstere.

This idea of the city and functional urbanism, reduced to the study of housing and the functions of urban space, is countered by another idea of the city, proposed by Constant in *New Babylon*.

New Babylon

The New Babylon contrasts the idea of functional urbanism, which studied the city from the point of view of housing and function. The New Babylon proposes a city where urbanism is elevated to the level of creation. The characteristic elements of this urbanism were: 'the animation of an ordinary street, the psychogeographical effect of different surfaces and constructions, the rapid change of a space through the introduction of ephemeral elements, the rapidity with which elements change and the variations possible in the general environment between different neighbourhoods' (Careri 2001).

The New Babylon is a city made up of sectors; the first is presented for the first time in 1959 under the name 'orange construction' (*Constructie in oranje*, 1958. Fig. 3.) in the catalogue published by the Situationist International for the Constant exhibition of the same year.

Figure 3. Constructie in oranje 1958. Author: Constant. (Source: Stichting Constant. n.d.).

They are a series of images and three-dimensional models depicting the city hanging *'as if it were a large spaceship landing*' (Careri 2001, 51). The models generally feature beams and tie-rods that support the structure, which rests on three feet. Everything is wrapped with a transparent plexiglass membrane. Afterwards, Constant will set to work to make the other sectors of the city such as the red, yellow sector, eastern sector, the inner sectors and the New Babylon sector, and finally the two Spatiovores (space devourers) rising from the ground like transparent shells. Careri (2001, 62). writes "*The architecture of New Babylon resembles Piranesi's Campo Marzio, it is a catalogue of infinite geometries and architectural inventions at all scales, an enormous quantity of fragments that entire generations of architects will be able to assemble and reassemble in their turn. Areas change shape and atmosphere depending on the activity taking place there. No one will ever return to a place they have previously visited, no one will ever meet an image that*

already exists in his memory". Architecture thus becomes a social *Panta Rei* and living space for the new man, the Homo Ludens theorized by Huizinga.

During this period, the exponents of Radical Architecture, represented by the Archizoom and Superstudio groups, which originated in the school of architecture in Florence, were on the move in Italy.

THE TRANSFORMATION OF UTOPIA INTO DYSTOPIA

The utopias of Radical Architecture differ from their predecessors in that they do not design a socially better community. They denounce the social and economic behaviour of their time and make nothing more than an urban prediction resulting from unrestrained capitalist development. Taking the double meaning coined by Thomas More or Marcuse's definition as a reference, the visions of Archizoom and Superstudio are not utopias.

The two Radical Architecture groups, Archizoom and Superstudio were born on the occasion of the Pistoia exhibition held from 4 to 17 December 1967. These groups were made up of recent graduates who had also worked together as students in the Faculty of Architecture in Florence. The exhibition was set up along the artistic lines of Roy Lichtenstein and Warhol, so the young people in Florence were very much influenced by the Pop culture of the 1960s. Driven by this culture, Radical Architecture peered through the impure, vulgar and trivial objects from the daily news like a Duchamp readymade, they take these elements and build new systems capable of undermining the conventional characters of the project.

On the architectural side, right from their university days, they were inspired by the megastructural dimension of the cities and buildings of Louis Kahn, Archigram and the Metabolists, who were the protagonists of architecture at that time. A discriminating element is the political orientation, which in the case of the members of Archizoom fuels their "*aspiration for radical social change, which sometimes drives them to transform the architectural project into a form of critical analysis and denunciation of consumer society*" (Gargiani 2007, 13).

Superstudio's Twelve Ideal Cities and Archizoom's No-Stop City

In the most expressive urban works produced by Superstudio, one cannot speak of utopias given the fact that apart from a new spatial organisation, there is no new social organization. On the contrary, in Superstudio's cities the individual is isolated in his cell where all nature is reproduced by means of sophisticated technology implanted in the walls, and the individual living in this cell is in contact with no one and with nothing, he lives in a virtual reality. Under these conditions, one cannot even speak of a real society. The inhabitant of Superstudio's cities will always be condemned to live as a prisoner of the system.

The No-Stop City is lived by a nomadic, hippie population, constantly on the move. Sometimes this characteristic of the population is reflected in the material structure of the city, as in the case of Ron Harron's Walking City. This vision does not define the framework of a future city, nor is it a utopian city. The No-Stop City is meant to be the surface ideogram with which to demonstrate the ongoing fate of capitalist development of a now urbanised globe (Gargiani 2007).

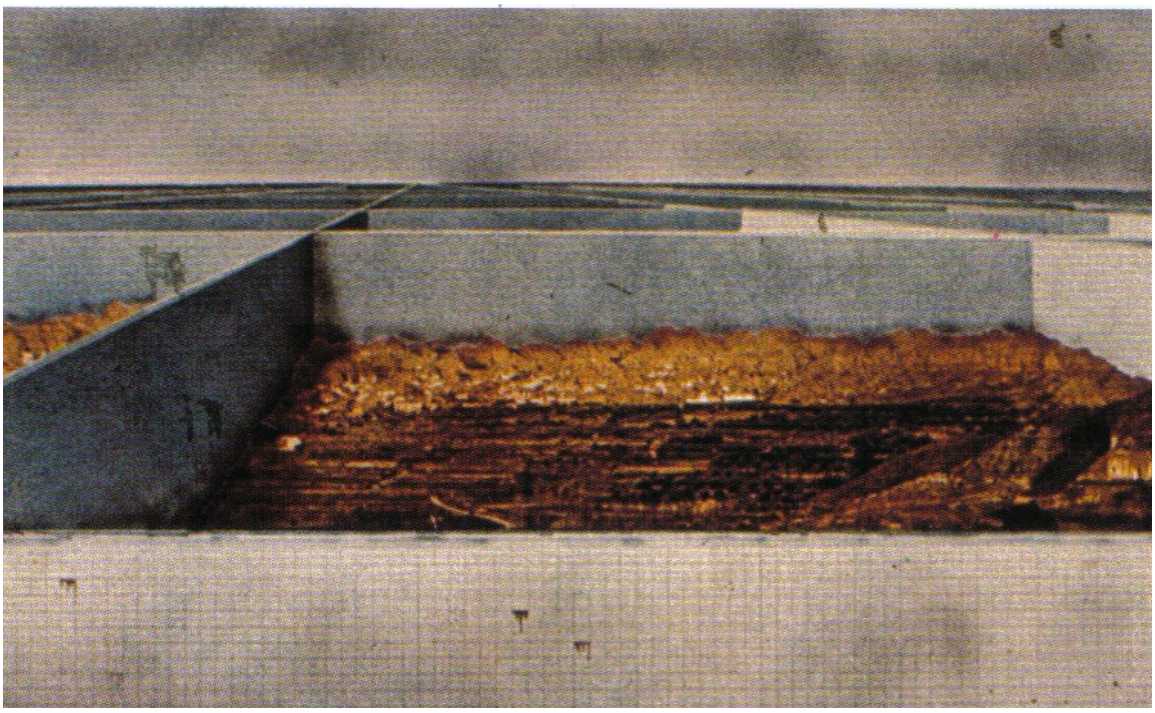

Figure 4. 2000-Ton City. Author Supersutdio 1971. (Source: Hidden Architecture. n.d.).

THE NEW UTOPIAS - ENVIRONMENTALISM AND THE COMMON

Different is the nature of utopia in the present day – it still lives, in a hopeful attitude towards a possible reconciliation between the city and the environment, and moreover in the idea that beyond the private and the public there is another sphere called 'the common'. Actually, the common ground is nothing new absolute; it has been tried, with disastrous results for the community, in dictatorial countries such as Albania, Bulgaria, Russia and so on.

The end of modernism also marks the end of its positivist philosophy. Positivism preaches dominion over nature through the progressive evolution of technology that can lead to unlimited production and consumption of material goods. Meadows, Randers & Behrens's (1972) The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind was published by the Massachusetts Institute of Technology, a report that highlighted the finite nature of the earth and the limitation of growth. In their conclusions, the authors emphasise that if we are not to arrive at an environmental catastrophe, we need a new ethic and we must change our attitude towards nature. Hence, the awareness to protect nature and the environment around us and an attitude of rejection towards architecture as the main reason for degradation. Vittorio Gregotti teaches that architecture has as its primordial act the tracing in the territory made to demarcate urban space from the chaos of nature.

Benevolo writes that urban space is such insofar as it is well delimited by nature, and if there were no physical limit, the conception of urban space would also disappear (Benevolo 2011). In addition, according to Abbot Laugier, architecture was born to protect man from the elements of nature, from which it can be deduced that there can be no harmonious fusion between architecture and nature because the former is born to oppose the latter. If this happens or will happen, it will always be to the detriment of architecture.

From this point of view, the fusion of nature and architecture can be considered utopian because they are two things that clash and the verification of one entails, by definition, the disappearance of the other. Following the division of utopia according to Marcuse, this belongs in the category of unrealisable utopias because it goes against its own definition.

In the contemporary landscape, the most recurring utopia is that of the common. There are many intellectuals who have been devoting their attention to research on the common dimension since the 2000s (Ostrom 2006). Their writings make evident a social/economic crisis generated by postmodernist ideology and the need for a return to the communal organisation of society.

The concept of the commons crosses not only social and political disciplines but also architecture. The 2012 Venice Biennale had 'Common Ground' as its keyword. What motivated the curator, David Chipperfield, to dedicate the biennale to 'Common Ground'? In a world where all things are ephemeral, fragmented, relative and liquid, the collective and communal dimension appears as the last hope for the future. The answer as to why all this interest in the collective and the commons, is given to us by Zygmunt Bauman when he writes:

"We lack community because we lack security, a fundamental element for a happy life, but one that today's world is less and less able to offer us and increasingly reluctant to promise" (Bauman 2009, V). Bauman sees the search for community as a physiological reaction of the individual, who, finding himself in an economic-social and identity crisis, seeks to build community. Daniel Innerarity (2008) sees the realisation of the community as inevitable and no longer dependent on our individual will, as it follows the logic of globalisation. Of the same opinion are Hardt and Negri when they state that: "The first consequence of globalisation is the creation of a common world" (Hardt 2009). By common, the authors mean: 'in the first place, the common wealth of the material world - the air, the water, the fruits of the earth and all the gifts of nature [...] By common, one must more precisely understand everything that is derived from social production, that is necessary for social interaction and the continuation of production, such as knowledge, languages, codes, information, affections and so on'. Implicit in this part is the distinction of the term common into two categories; on the one hand the common understood as material wealth given by nature and on the other as wealth produced by the creativity of the human mind. Hardt and Negri argue, in their book, that the municipality can be an alternative to public and private.

This climate of caring for the commons that is currently affecting architecture as well must not lead to the annulment of the discipline of architecture, and what is more, we must remember that in a fractured society, the role of the architect must not be confused with that of the social activist. The architect's role is to design and realise a building that best meets the needs of the community or the people who are going to live in it. As Vittorio Gregotti (2008) shows, architecture has a history and is a discipline with its own identity that today risks liquefaction with other social disciplines. Precisely in order to avoid the disappearance of architecture, it is necessary to specify research in its field and not superimpose other environmental or social disciplines on it.

CONCLUSIONS

Contemporary discourse reveals a marked transformation in the conceptualization of utopia – from a tangible, spatial construct to an abstract, ideological paradigm. The utopian visions of the modern movement, along with those of 19th century precursors, were predominantly oriented toward the enhancement of the physical living environment and were characterized by a clearly defined spatial identity. Proposals such as the Phalanstere, Familistère, and New Harmony offered concrete models for inhabited space, while architects like Walter Gropius, Le Corbusier, and Alexander Klein advanced designs for both domestic architecture and the urban fabric. These intellectuals and practitioners reimagined the built environment through visionary interventions, positioning utopia as a catalyst for spatial improvement and as a vehicle for reshaping the collective mindset of society.

Following the decline of dominant ideologies after the Second World War and the emergence of postmodernism, utopia underwent a conceptual inversion, giving rise to dystopian or kakotopian narratives. These visions projected apocalyptic scenarios in which society would confront the consequences of unchecked consumerism and environmental neglect. The speculative imaginaries of groups such as

Archigram, Archizoom, Superstudio, and the Japanese Metabolists exemplify this critical turn, challenging the premises of modernist urbanism and proposing radical alternatives.

In the past three and a half decades, particularly after the dissolution of the Soviet Union and the ascendancy of globalization led by the United States, utopia has shifted once more – from a spatially grounded project to a conceptual or ideological construct. This contemporary iteration no longer engages directly with the physical configuration of inhabited space but instead articulates abstract frameworks – such as environmentalism or the notion of "the common" – as instruments for societal transformation.

The fundamental distinction between the utopias of the 19th and 20th centuries and those of the 21st century lies in their relationship to spatiality. Earlier utopias were materially embodied and spatially situated, whereas contemporary utopias tend to operate at the level of discourse, offering conceptual models that are not necessarily translated into physical form. As such, they emerge as ideological formations that reflect the evolving priorities and imaginaries of the 21st century.

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ORNAMENT AND THE CONSTRUCTION OF AUTHENTICITY IN ARCHITECTURE

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ABSTRACT

This paper explores the complex relationship between ornamentation and authenticity in architecture, analyzing how these concepts perceived as oppositional during Modernism intersect to shape architectural meaning in the history. Ornament, beyond its decorative role, carries cultural, historical, and symbolic significance, while authenticity embodies notions of originality, material honesty, and respect for cultural heritage. The study investigates how authenticity as cultural heritage preservation, sustainability, economic value in relation to tourism, and aesthetic identity, functions today. Authenticity, as a word intrinsic to originality of architecture is being redefined once again.

The paper further examines the history of the word authenticity and tries to create trajectories on the change of ornament in architecture in architectural history. Ornament which is the primary medium through which architectural authenticity is expressed, is back after a long silence. However, architectural practice seems to have undergone rapid change, particularly since the beginning of the twenty-first century, so did the ornament in contemporary ways of its existence. This new phase of architecture, brings new definitions of authenticity which is not reflected yet on the dictionaries. This paper investigates new status of architectural ornament, by reflecting on the new definitions of "authenticity in the language through some contemporary examples.

Contemporary examples in the new rise of ornament in new rising cities is in the focus of this study. Louvre Abu Dhabi designed by Ateliers Jean Nouvel, is a fertile example to investigate on and understand new definitions on authenticity in contemporary times.

KEYWORDS: Architectural Ornamentation, Architectural Authenticity, Aesthetic Identity, Ornament and Meaning, Modernism and Postmodernism

1. INTRODUCTION

What happened to the architectural ornamentation today? Architectural practice seems to have undergone rapid change, particularly since the beginning of the twenty-first century. Globalization, our growing environmental awareness, and advances in computer technology have all played a significant role in this change. These rapid changes have attracted the attention of architectural theorists and practicing architects, prompting them to reflect on and research new topics arising from developments in practice and technology. However, establishing connections between these topics and many conceptualizations that occupy an important place in the foundation of architectural history has been somewhat neglected. One of these key conceptual topics is architectural ornamentation.

It is clear that after a long period of silence, there has been a powerful revival in ornamentation in the current century, but this revival appears to be of a very different kind than what we know from the past. Before the modern movement dismissed ornamentation as a minor component of architectural projects, ornamentation in the West exhibited certain predictable characteristics that are not very common today. (Antoine Picon, 2016) However, it is not really possible to interpret today's examples of architectural ornamentation as sequences belonging to an organized common discourse shaped within the boundaries set by pre-Modern styles. Today's understanding of architectural ornamentation presents itself as systems of individual analysis and affect, bearing some common characteristics in their singular existence.

In the past century, ornamentation in architecture was seen as works that directly revealed the essence of cultures. Therefore, there were certain limitations in the application of ornamentation on earth and in the historical flow. Ornamentation was an authentic production that had to belong to its place and time, and situations where the contextual aspects of ornamentation were neglected resulted in a clear decline in the quality of the work. In history, anachronistic or inauthentic choices in architectural ornamentation have led to architectural production being labeled with eclectic or “neo-” prefix style definitions, associating it with a lower category of production in terms of being genuine.

Indeed, in the global architectural environment of our time, we have witnessed the breakdown of the local and temporal patterns that shaped the past century. Contexts established with a formal attachment to time and place have lost their significance, giving way to architectural contexts that embrace the common environmental concerns of the entire world and aim to make the best use of technology for the sake of architecture. This is also synchronized with the changing meanings that fill the word authenticity. When architectural styles seeking authenticity lost their importance as a dominant category in art history research, ornamentation also declined in the same way in theoretical studies in terms of terminology, but the connection between ornamentation and originality in architecture has never ended, even when looking at contemporary examples.

This article focuses on the close relationship between ornamentation and authenticity in architecture, attempting to fill a theoretical gap that has remained over time. These two concepts, ornamentation and originality, which have been considered almost opposites in the modern era, today demonstrate their close relationship in bold examples in newly developing cities. Within the scope of the article, the meanings of the concept of authenticity in the twenty-first century will first be explored in depth with a lexical meaning, and then the role of ornamentation in establishing new authenticity will be analyzed through examples of contemporary architecture.

2. THE HISTORY OF THE WORD “AUTHENTICITY” IN ENGLISH

In the history of architecture, ornamentation has a cultural, historical, and symbolic significance beyond its decorative role, serving as an “indicator” that embodies the concepts of originality, material integrity, and respect for cultural heritage. In studies on “originality” in architecture, we often encounter the concept of ‘authenticity’ being addressed in terms of the preservation of cultural heritage, values with a tourist appeal,

and aesthetic identity. In all three of these uses, “authenticity” has established a semantic connection with the ornamentation carried by architectural elements.

Presentism, in the field of history, refers to the tendency of interpreting and evaluating past events, cultures, and people based on the norms, values, and perspectives of the present. During this research it is important to escape from such an approach. It involves judging historical figures, actions, and situations through the lens of contemporary beliefs and moral standards, often leading to anachronistic conclusions. In essence, it involves projecting present-day ideas and sensibilities onto the past.

The meanings of words are not fixed in languages. Words lose some of their meanings as the world changes, while taking on new meanings they did not previously have. “A New English Dictionary on Historical Principles” (OED), with its three updated editions published from the late nineteenth century to the present day, is a valuable resource for researchers seeking to gain a historical understanding of the deeper meanings of words. (A new English Dictionary on Historical Principles, 1972)

According to the Oxford English Dictionary, the word “authentic” entered Old French as ‘autentique’ in the 13th century, derived from the Latin “authentic-us.” By the 15th century, it had diverged from the Latin word “auctor” through mispronunciation. By the 16th century, it had assimilated the meaning of the original Greek word. This semantic evolution was achieved through the influence of Middle Latin and French.

It is possible to say that the word “authentic” has multiple origins. It was borrowed into English partly from French and partly from Latin. The meanings of authentic were comprehensively revisited in the third edition of the OED in 2014. The word authentic is divided into two categories: adjective and noun meanings. However, all meanings of authentic as a noun are obsolete, except for the meaning related to music, which is the same as meaning A6.

The fourth adjectival meaning of “authentic”—referring to “Esp. of a document: that is the origin or source of something; original, primary; not a copy.”—is no longer used in modern English. For example, “The book..was originally copied from Authentic writings.” (I. Newton, Chronol. Anc. Kingdoms Amended, 1728, vi. 369; A new English Dictionary on Historical Principles, 1972) The meaning of ‘authentic’ indicating ownership, “belonging to the person in question,” is also considered obsolete today.

The meaning given as the 7th meaning in the OED Edition 3, which came into use in the second half of the 17th century, “Genuine; not feigned or false” constitutes its most common meaning today. When referring to “a document, artefact, artwork,” the common meaning is “Of a document, artefact, artwork, etc.: having the stated or reputed origin, provenance, or creator; not a fake or forgery”. In early usage, it is difficult to distinguish this meaning from the word's first meaning, “Legally valid; having proper legal form; possessing legal force.” This is especially true when the usage concerns legal documents. Some authors have historically distinguished the meaning “unique” from the word's second meaning, “Esp. of a statement, text, etc.: in accordance with fact or stating the truth, and thus worthy of acceptance or belief; of established credit; able to be relied on; truthful, accurate.” Today, these two meanings, which almost overlap in their value of truthfulness, have acquired almost opposite uses, particularly by authors writing on “Christian Evidences.” For example, “A genuine book is that which was written by the person whose name it bears, as the author of it. An authentic book is that which relates matters of fact as they really happened.” (Bp. R. Watson Apol. for Bible, ii. 33; A new English Dictionary on Historical Principles, 1972)

The seventh meaning of the word is grouped under five subheadings. The seventh meaning also encompasses the following meanings: “That is the actual thing or person; that rightly or properly bears the name; genuine, real.” This meaning, which began to appear in English in the second half of the nineteenth century, also shows us that terms such as “real” and ‘actual’ now overlap with the dictionary meanings of “authentic.” According to the OED, various suggestions have been made for the equivalent of this entry, including “real,” “actual,” and “self-made,” for which there is no other evidence in either English or French. It is possible that the original “autenticque” was interpreted as ‘splendid’ or “magnificent” (14th century) in Middle French, a semantic development that is well established but has no parallel in English.

Another of the word's seventh meanings is significant in that it includes the word “original” in terms of its semantic equivalent. The word's usage in this sense dates back to the early twentieth century and is much newer than expected. This meaning is as follows: “Presenting the characteristics of the original; accurately reproducing a model or prototype; made or done in the original or traditional way.” Here, we see that among the meanings of authentic, similar to original, the meanings of being “traditional” and “adhering to tradition” are also included.

The fourth of the seventh meanings of the word is one of the most current meanings of authenticity that centers on the human being. It means “That truly reflects one's inner feelings; not affected, unfeigned.” The semantic shift experienced here points to a shift in emphasis between the transcendent and the worldly. Authenticity, freed from its perceived dependence on external factors to which it was believed to derive its essential value, is equated with loyalty to individual, worldly emotions, which is experienced in connection with contemporary cultural and temporal transformations. This contemporary meaning of authenticity will shed light on our understanding of the state of architectural ornamentation today, following the transformations it has undergone in architecture since the seventeenth century.

In the sense of a person's actions being consistent with their own feelings and true emotions, “authentic” is attributed a new ethical value specific to the twentieth century, meaning honesty. In everyday speech, even in street slang, this usage is widespread as one of the word's primary meanings: “Be real,” “be authentic”. (Taylor, 1997)

The final sub-entry of the seventh entry in the OED is the meaning of the word “authentic” that coincides with authenticity. This final meaning also enlightens us on how authenticity should be understood today in this discussion we have initiated through architecture and decoration. This meaning, which belongs to the field of philosophy, is “Designating a mode of existence which has its basis in self-awareness, critical reflection on one's goals and values, and responsibility for one's own actions; of or relating to this.” The use of the word in this sense in philosophy is based on Heidegger. Heidegger highlights the distinction between “authentic” and ‘inauthentic’ existence and the impersonal phenomenon of “being.” (From OED, 3rd ed., 1944, Philos. & Phenomenol. Rest. 5 p.394)

Authenticity is a term that resembles a very good example to how a word can change through time in a language. According to OED, Authenticity, which is term born in the 14th century, was not a term used for art or architecture until the mid of 18th century. Social, technological changes have made authenticity into new version of itself until its use in slang being true, being real to oneself in today’s English.

So how can architecture be interpreted through these characteristics? What insights will the concept of ornamentation in architecture, which influences a way of thinking in the English language, offer us regarding the value and meaning of architectural ornamentation? This topic will be considered and ideas will be formed by juxtaposing the historical development of the word with the history of architectural ornamentation.

3. TRESHOLDS OF ORNAMENT AND ITS REVIVAL IN THE 21ST CENTURY

“Ornament is back” says Vittoria Di Palma according to whom contemporary ornament tend to be united by some characteristic qualities. First, contemporary architectural ornament is almost always integrated with the building surface. It may be flat, or disposed in a number of parallel layers, but in most cases it reads explicitly as an unremovable part of the exterior skin. Ornament and surface are one. (Di Palma, 2016) This perception of ornament is comparatively new. Second contemporary ornament tends to exhibit an all-over quality. (Di Palma, 2016) These properties of 21st century contemporary ornaments have been highlighted in many theoricians academic writings. According to Antoine Picon, change in the ornament can be classified by its two aspects. First, architectural ornament was restricted to specific areas in the past, concentrated at key points of a building. In many contemporary projects by contrast, it covers the entire façade applied as an overall element, a feature of the skin of the building as a whole. Secondly, ornamentation was

traditionally regarded as “supplementary” in a nuanced way, it was perceived as a superficial addition, an external embellishment affixed to the building’s core structure. (Picon, 2016) Nevertheless, it was also considered indispensable, precisely because one could imagine its absence. Louis Sullivan’s article “Ornament in Architecture” (1892) was a pioneer of this questioning. He said “The mass-composition and the decorative system of a structure… should be separable from each other only in theory and for purposes of analytical study. I believe, as I have said, that an excellent and beautiful building may be designed that shall bear no ornament whatever; but I believe just as firmly that a decorated structure, harmoniously conceived, well considered, cannot be stripped of its system of ornament without destroying its individuality”. (Sullivan, 1892) So Sullivan was distinctive about ornament that could be easily stripped of its mass and functioned cosmetically. That’s way in the Modernist thought, it operated as a delicate surface feature, comparable to hairstyle or makeup, while simultaneously revealing the underlying structural logic. Picon points out the etymologycal history of the terms: “cosmic” and “cosmetic” share a common Greek origin meaning “order” or “arrangement,” a linguistic connection that underscores the paradox between the ornamental’s apparent triviality and its deeper ontological significance. (Picon, 2016) Traditional aesthetic principles governing ornament reflected this tension between surface and essence. This paradox between the ornamental’s apparent triviality and its deeper ontological significance is what creates the back-and-forth movements of the pendulum about ornaments’ meanings, honesty and necessity in the architectural history.

Honesty became an important term in the beginning of modernity whether it’s a person’s self-dignity or a buildings visual message. For the twentieth century philosopher Martin Heidegger, one of the major challenges we face as humans is being ourselves in a world that is constantly trying to make us something else. (Heidegger, 1927) Like other philosophers labeled “existentialist”, Heidegger championed the value of authenticity: of forging our own paths through life and living according to principles and values that we ourselves affirm. However being an absolutely nonconformist, authentic person “all the time” might seem rather unrealistic, and Heidegger would agree. In his work “being and time”, Heidegger argues that given how we are “thrown” into a world of shared cultural contexts and meanings, it is absolutely inevitable that we end up conforming to the values of public life and become complacent about how we live our lives.

These ways of thinking, which began in the first half of the 20th century, are directly linked to all the meanings of the word “authentic” that emerged in the first half of the century. With the expulsion of ornamentation and architectural styles from architecture, “authentic” has lost some of its meanings and gained new ones. The meaning of the word “authentic” in the OED, derived from Heidegger's philosophy of being, is noteworthy in this sense: “Designating a mode of existence which has its basis in self-awareness, critical reflection on one's goals and values, and responsibility for one's own actions; of or relating to This”. This meaning coincides with the first half of the 20th century, when Modern architecture rose to prominence with its radical aesthetic approach based on white walls. The semantic dimension of authenticity developed primarily through the existential crises that architectural ornamentation underwent.

The word “authentic” has lost its meanings that evoke compliance with authority, such as “legally valid; having proper legal form; possessing legal force,” and has transformed into meanings that emphasize truthfulness and honesty, such as “that truly reflects one's inner feelings; unaffected, unfeigned.” It is possible to consider the influence of movements initiated by radical writers such as Adolf Loos in this transformation.

When, in 1907, the Viennese architect Adolf Loos claimed provocatively that ornament was a crime, a millennial tradition of artistic form seemed to have come to an abrupt end. (Necipoğlu & Payne, 2016) According to Loos removal of ornament not only in architecture but from all sides of life was crucial for the modern man. "Ornament and Crime" redrew the contours of ornament's troubling status for the modern age. Deploying a moral argument to draw a parallel between the ornamental drive and various forms of "backwardness"-the primitive, the infantile, the tattooed, the degenerate, the frivolous and the feminine. Loos famously wrote: "the evolution of culture is synonymous with the removal of ornament from utilitarian

objects."(Loos, 1907) With this pithy statement, Loos sought to make the ornamentation of modern architecture taboo. By making ornament seem an element that could simply be scraped off, like an overly rich frosting piped high on a cake, Loos was aiming his criticism at a particular kind of ornament, an ornament that seemed applied and supplementary, rather than integral to the object at hand.(Vittoria Di Palma) That is why ornament could not be a true substance of a building. It was secondary. In order to be real to itself, in order to be "authentic", its removal was necessary.

However today in the first quarter of 21st century, we are facing different truths of the world separated our way of seeing, doing and producing things from the beginning of 20th century. This new phase of architecture, brings new definitions of authenticity which is not reflected yet on the dictionaries. Ornament made an efficient turn in architecture which no more bears any meanings of secondaryness that could be related with "inauthenticity". At this stage we will try to understand new status of architectural ornament, by reflecting on the new definitions of "authenticity in the language through some contemporary examples.

4. CONTEMPORARY EXAMPLES OF THE NEW RISE OF ORNAMENT IN THE NEW RISING CITIES: LOUVRE ABU DHABI

When examining academic studies on "authenticity" in architecture today, it is evident that the subject is approached within four fundamental frameworks: the preservation of cultural heritage, sustainability, economic value related to tourism, and aesthetic identity. Architectural ornamentation functions as an envelope system that envelops the entire building, fully integrated with it, while also housing part of the building's mechanical systems. Today, architectural ornamentation cannot be associated solely with preserving historical continuity; it also contributes to mechanical solutions, ecological responsibility, community identity, and socio-economic vitality.

Therefore, the graphic elements we encounter in contemporary projects today are related to the architectural ornamentation that Adolf Loos sought to eliminate from architecture, but they do not belong to the same category. This article considers today's architectural ornamentation as an entirely new architectural element.

In their book "The Function of Ornament," Farshid Moussavi and Micehal Kubo treat ornamentation and the entire facade as separate categories, just as architects did at the beginning of the 20th century, separating them from the interior of the building. (Moussavi, 2006) New cities on the rise in the 21st century, such as Abu Dhabi and Dubai, have repeatedly demanded the construction of monumental buildings such as shopping malls, museums, convention centers, libraries, and municipal buildings. Architecture finds itself largely designing the skin that envelops these large-scale, enclosed structures, while the detailed solutions for the interior spaces are left at the rough construction stage to be resolved by interior designers. From this perspective, Moussavi argues that the primary role of architects in the 21st century has become the design of this façade, this skin. (Moussavi 2006) In designing these envelopes, Moussavi argues that our contemporary moment demands a new kind of ornament, one that has left traditional forms and roles behind. Since a globalized society means that shared cultural reference points are no longer ubiquitous or even common, architecture must find a new set of mechanisms to enable it to connect to culture at large. Ornament can function as that mechanism, but in order for it to do so, it cannot be defined or limited by any particular cultural context. The function of contemporary ornament is to act as a vehicle for buildings to "produce affects that seem to grow directly from matter itself."(Moussavi, 2006) And this term, "the affect" and its search in order to touch ones feeling, or grab a certain attention, is a new aspect "authenticity" gained in architecture in the 21st century.

Taking a look at architect Jean Nouvel project, Louvre Abu Dhabi can be a good example of affect and its authenticity. According to the architects, the project reinterprets the dome, a powerful symbol of heaven both in Islam and Christianity. But this dome is no longer a reference to religion, but to the Arab aesthetics brought into a highly technologized world. (Picon, 2016) If you take a look at the buildings that actually host

the museum, they are plain and white, impersonal and cold. They recreate the same language of plain, white boxes found in the modernist movement of the 20th century. It is a profane building after all. The dome as both ornament and structure.

Located on the artificially created Saadiyat Island, the Louvre Abu Dhabi is a unique synthesis that combines traditional architectural elements with advanced construction technologies. The museum's serene atmosphere invites visitors to witness the constantly changing interactions between sunlight and dome geometry, sea and land, architectural mass and natural surroundings. The building's complex engineering infrastructure makes it one of the most innovative and technically ambitious museum projects of recent years. The museum is positioned as a key component of a comprehensive cultural district that includes the Guggenheim Abu Dhabi, designed by Frank Gehry, and the Zayed National Museum, developed by Foster + Partners. The convergence of these institutions contributes to the formation of a holistic art and architecture ecosystem that shapes the island's cultural landscape.

The white structures, closely related to water, evoke the coastal architecture typology specific to the region's hot climate conditions, referencing traditional environmental adaptation strategies. The dome, central to this narrative, serves as both a symbolic and environmental element, enhancing the sense of unity among sky, sea, and desert. Through the filtered sunlight, it creates an atmosphere imbued with spiritual resonance. The dome itself is a technical marvel: 180 meters in diameter and composed of eight superimposed layers—four of stainless steel on the exterior and four of aluminum cladding on the interior. Embedded within these layers are 7,850 star-like geometric perforations, arranged in varying sizes and orientations to create an intricate “rain of light” effect as sunlight passes through the structure throughout the day. (“Louvre Abu Dhabi / Ateliers Jean Nouvel” 2017)

This architectural choreography results in a continuously evolving play of light and shadow, which Nouvel refers to as the project’s defining spatial and experiential quality. Beyond its symbolic and visual significance, the dome also serves environmental functions by providing shade to the central plaza and the buildings below, thereby reducing solar heat gain and energy consumption. (“Louvre Abu Dhabi / Ateliers Jean Nouvel” 2017) The dome enables a comfortable microclimate, allowing fluid movement between exhibitions, children’s museum, auditorium, and dining areas. And This mega dome is what gathers them all togetger under one shell. The dome is dominant, its the creator of the space, the narrator, the mother. It is ornamental but it is nothing secondary. The dome is also an inspiring architectural solution for our age.

Louvre Abu Dhabi and its dome reflects an example to architectural ornamentation in our age, and its ties with the new understanding of “authenticity”. The dome is the core of the project which serves more than one function. It is structural and includes pioneer mechanical solutions for its location, it bears an ecological responsibility, a respect to the national identity and serves for the buildings sustainability bringing socio-economical life to the city. Contemporary ornament, unlike historical or postmodern forms, does not aim to decorate or convey symbolic meaning. Instead, as Moussavi argues, it functions as an “empty sign” that evokes affect and resonance rather than representation. (Moussavi, 2006) While traditional decoration communicates through resemblance, contemporary ornament appeals directly to sensation, enabling it to transcend spatial and temporal boundaries and achieve a universal effect.

5. DISCUSSION

Since the beginning of the 21st century, architectural practice has undergone a profound transformation under the influence of dynamics such as globalization, environmental awareness, and digital technologies. This transformation has led to the redefinition of architectural ornamentation in both formal and semantic terms. After a long period of silence, ornamentation has been revived in contemporary architecture. However, this revival presents itself as a new form that aims to produce sensory effects, going beyond the representative and secondary meanings of historical ornamentation.

Today, architectural ornamentation is not merely regarded as an element of historical continuity or a decorative feature; it is also approached as a holistic system that contributes to the ecological, technical, cultural, and socio-economic context of a building. Today the ornament is free again because it is related with so many functions. As Farshid Moussavi emphasizes, contemporary ornamentation functions as a tool that appeals to the senses, produces direct affects, and can create universal resonance without the need for symbolic codes. (Moussavi,2006) Jean Nouvel's Louvre Abu Dhabi project offers an impressive example of this new approach to ornamentation. The dome carries historical references as both a structural and symbolic element, while also incorporating contemporary values such as advanced engineering solutions, climatic sustainability, and respect for national identity. The museum structures, composed of simple and functional white boxes, bear traces of modernist aesthetics; while the complex dome covering them, interacting with light, produces the sensory impact of contemporary ornamentation. Critically it is possible to say, ornament is absorbed into building envelopes as patterned surfaces, climatic filters, or performative skins, severing its direct relationship with aesthetics as a deliberate artistic pursuit. What appears as ornament is often the residual effect of parametric systems, structural optimization, or environmental performance strategies. As such, ornament loses its autonomy and critical agency, becoming incidental rather than expressive.

The shift in meaning of the concept of “authenticity” also plays an important role in evaluating this new approach to decoration. Authenticity now encompasses not only fidelity to historical or cultural sources, but also sincerity based on the individual's feelings and experiences. This contemporary understanding of authenticity, based on Heidegger's existential approach, reveals that architectural decoration is a new form of representation associated with self-awareness, ethical values, and critical thinking. This way architectural language of contemporary ornamental surfaces privileges sensation and function over meaning, atmosphere over substance, and indivuslity over continuity. Authenticity, in this sense, is no longer something that architecture possesses, but something it simulates through sensory and experiential cues.

In conclusion, ornamentation in 21st-century architecture should be regarded not merely as a formal repetition of the past, but as a new architectural tool that deepens the cultural, technical, and emotional contexts of buildings. Ornamentation is no longer merely an aesthetic addition or a nostalgic reminder of the past. Today, ornamentation is an effective way to produce authentic experiences for contemporary architecture, increase spatial sensitivity, and strengthen the building's interaction with its cultural context.

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FROM RED-LIGHT TO URBAN VOID: SPATIAL ERASURE AND MEMORY IN ISTANBUL'S ZÜRAFA STREET

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ABSTRACT

Red-light districts, while deeply embedded in the social and cultural histories of cities, occupy a challenging spatial condition within the urban fabric. They are central in historical narratives of labor, gender, and nightlife economies, yet remain socially contested due to issues of morality, legality, or land use. This study investigates Zürafa Street, one of Istanbul's oldest and most renowned red-light districts, which had been in continuous operation for nearly two centuries before its abrupt closure during the COVID-19 pandemic. The subsequent demolition of the brothels in 2021 not only ended a long-standing urban economy but also erased a unique socio-spatial fabric that had shaped the district's identity for generations. Today, the street remains physically undeveloped and socially ambiguous, resulting in a pronounced urban void at the heart of Beyoğlu. This void is both spatial and symbolic, raising questions about memory, land use, and urban governance, and the contested uses of public space in Istanbul. Using a mixed-method approach, including 21 semi-structured interviews with users and systematic on-site observations, the research applies Lefebvre's spatial triad to analyze perceived, conceived, and lived spaces. Findings reveal that the absence of deliberate urban intervention has diminished spatial quality and limited social engagement. The study proposes pedestrian-oriented, multifunctional redesign strategies to reinvigorate the area, restoring its social and urban significance. By situating Istanbul's experience within broader European debates on post-red-light-district urban regeneration, this research contributes to understanding how socially contested urban spaces can be thoughtfully reintegrated into contemporary cityscapes.

KEYWORDS: Red Light District, Urban void, Lefebvre's spatial triad

1. INTRODUCTION

The red-light district is one of the urban land uses typically found in the centers of some cities around the world. However, due to its functional nature and the way local residents interpret and perceive its activities, it is not considered a desirable use to present or showcase to the world. The presence of these districts in city centers, as well as the challenge of determining appropriate land uses after their demolition, has been a persistent issue for urban administrators in recent decades. Some urban administrators, such as those in Iran after the 1979 Islamic Revolution, have sought to remove the stigma that these areas have cast on the surrounding urban space over the years. In contrast, others, particularly in European countries like the Netherlands and Germany, show little concern for altering the collective perception of such spaces. In recent years, many European countries have adopted new policies aimed at relocating red-light districts to suburban areas, representing a significant departure from earlier centuries, when such activities were commonly situated in city centers (Van Liempt and Chimienti 2017; Weitzer 2018; Weitzer and Boels 2015; Sharma 2016). Istanbul is among the European cities that are actively reshaping their urban environments, undertaking extensive redevelopment of deteriorated neighborhoods in their city centers. Zürafa Street is one of three streets (Yüksek Kaldırım, Alageyik, and Zürafa streets) that form Istanbul's red-light district. The street had remained active for almost two centuries before it was ultimately closed due to the COVID-19 pandemic. Since the destruction of brothels on this street in 2021, the municipality has done nothing to renovate it. As a result, during the last three years, this area has become a neglected site in the heart of Istanbul's most prominent neighborhoods, serving as a refuge for criminals (addicts, thieves, homeless, working children, and so on) during the daytime. Urban designers face the complex task of reimagining these spaces as vibrant and attractive tourist destinations. This necessitates a thorough understanding of the existing physical and social layers within the area, identifying elements that can be repurposed or integrated into the new urban fabric. To inform and structure this process, Lefebvre's spatial triad can be employed as the guiding theoretical framework. This study aims to understand how the social-spatial structure of a specific area has been transformed. To achieve this, the research will employ a theoretical tool (Lefebvre's spatial triad) and interviews.

Lefebvre's triad considers the interplay of the perceived, conceived, and lived spaces, offering a nuanced understanding of how social, economic, and cultural forces shape urban environments.

This main question necessitates answering the following question, which is addressed in this study:

How did the urban spatial triad alter, before and after the destruction of the red-light district (Lived-perceived-conceived spaces lens)?

2. RELATED STUDIES

Kalijodo district in Jakarta was once a well-known red-light district. In 2017, the government decided to rid this area of prostitution by not only destroying the brothels and bars, but also demolishing neighboring houses and evicting their residents. It should be noted that these houses were the homes of illegal immigrants or citizens. This area's history can be traced back to the 17th-century Dutch colonial period. This area was once a cultural hub, but due to the presence of illegal immigrants, its isolation, and the city officials' failure to care for it, it became a border area that was considered a hiding place for criminals. Hence, this region turned into a paradise for Chinese refugees, who, due to their lack of partners, found love here. Until 1958, this area served as a special cultural center for the establishment of the Chinese cultural festival, where women and men would meet their lovers during the Blue Festival. The government halted this ceremony for unknown reasons, and the area became gradually isolated. In 1960, this area gradually became a gathering place for gamblers and sex workers. The reunion of these people and their prostitution-related activities resulted in the arrival of prostitutes from other brothels until 1999, causing the development of this area. This area eventually turned more notorious, and crime and sexual harassment rates rose alongside prostitution. After the area was destroyed and evacuated in 2017, the plan to construct

an urban park was implemented. The plan to replace brothels includes a children's park and integrated green spaces with gaming and entertainment equipment (Sutanto and Junadi 2018; Zerlina 2019).

Among the Asian countries with religious sensitivities, Iran is the best sample to be considered. The establishment of a brothel in Iran dates back to the 1920s and the formation of an area known as Shahr-No. This century-old neighborhood was Tehran's largest red-light district. After the revolution of 1979, extreme revolutionaries set fire to the entire area, and prostitution was made illegal. The former red-light district has now been converted into a large city-scale park with a variety of recreational activities (Soraya Batmanghelichi 2015; Dezhamkhooy and Papoli-yazdi 2020).

The empty spaces between residential sections in San Pablo Xalpa were deemed an environmental and security issue. These abandoned vacant lots between building masses could not be used as public spaces during the day, but they might be utilized as criminal refuges at night. As a result, the residents of these apartment buildings eventually had to reinforce their doors and windows with iron fences to defend themselves from thieves and criminals at night. The municipality decides to reconstruct them as part of a project according to the "revolution of void spaces" approach. What makes this project unique is that the architects produced plans based on the demands of the residents of each apartment complex. Children's parks, for example, have been constructed in dwellings with more children to provide educational and sporting activities. The achievement of this so-called revolutionary project is that it transformed urban void spaces into productive spaces, resulting in social and cultural improvement in the neighborhood. At the sub-neighborhood level, areas for communication and socializing, as well as urban activities, replaced void and abandoned spaces (Montiel and Wallach 2015).

3. METHODOLOGY

In this study, a mixed-method approach was utilized to assess the conditions of Lefebvre's trial spaces in the study area. The production of social and economic space has evolved in accordance with the transforming producers and consumers of space (economic, social, and cultural interactions). Economic products that were previously responsive to sex workers and their clients must now address the needs of tourists and new visitors by providing them with economic and social relations. To investigate the dimension of people's mental image of the area, former producers of social and economic activities (former sex workers and retailers who are no longer) are considered. The evaluated area includes Müeyyedzade and Galata neighborhoods. The sampling group (a sample of 21 individuals from five groups) was chosen due to the numerous layers of people's experience and spatial comprehension that are considered. Observations were conducted for 24 hours over two days (weekend and weekday) to recognize the groups referring to the space. In this study, it is attempted to conduct observations and interviews in a natural setting to explore participants' daily behaviors and activities. The land use and access maps obtained from the municipality were updated. Photography was conducted in four time periods (December, February, July, and September) between 2023 and 2024 to document the state of the abandoned areas. Throughout the study, the applied evaluation tools are SPSS, GIS.

4. RESULT AND DISCUSSION

4.1. Lived space

Routine and daily activities of producers

15 of people's activities are commercial (selling: shop owners, buying: tourists and residents), 3 (14.29%) are cultural-social (education, disciplinary), 2 (9.52%) are for entertainment and rest (small parks scattered within a 400-meter radius), and 1 (4.76%) is from the other activities category

The three main streets where the brothels were erected show that one of them, Alageyik Street (Zürafa Street is blocked to traffic on both sides), has a high volume of pedestrians. As a result, the goal of this

question is to discover why people prefer to cross this street (despite the steep slope). 50% of people use this small street to reach the back roads they know, while 33.33% pass through it just for curiosity (tourists), and 16.67% use this street as a bypass to go to Istiklal Street and Taksim Square. This street is highly noticeable to those who use it, both visually and physically.

4.2. Perceived space

Based on the street's location, past, and present activities, participants were invited to name it. Because they felt that this street represents an extension of the history and activity of the Karaköy district, 6 of the respondents thought the name "Karaköy" was appropriate. Furthermore, according to 4 of the respondents, the name " Zürafa " is excellent and should not be changed because it can serve as a reminder of the 200-year history of these streets. "Anadolu" is the name that 1 of the respondents thinks should be given to this street because they think its age will give these abandoned streets an extension of life and identity. 3 of those interviewed said that the neighborhood should be called "Elite" since it can be included in the restored areas surrounding Galata port and maintain the same level of environmental quality. Former sex workers call this particular street " The pains (Acılar) Street," indicating the emotional and psychological burden it has imposed on them, to the point where some are unwilling to even pass through this neighborhood anymore (Figure 1).

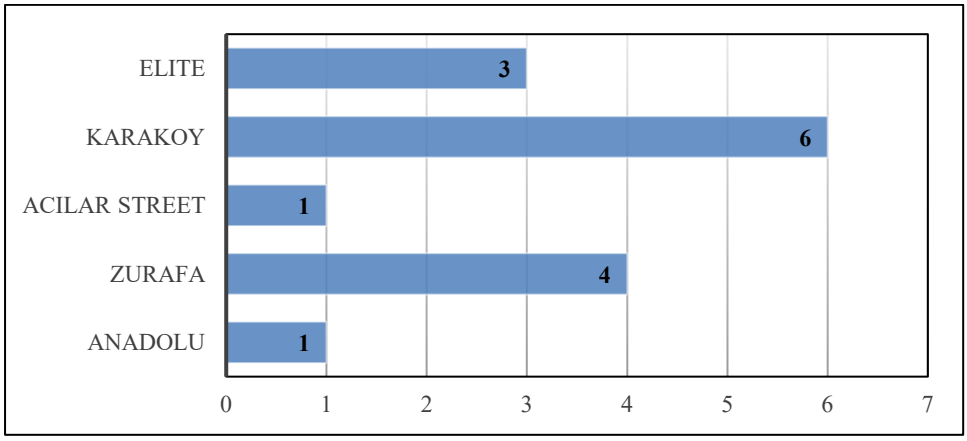

Figure 1. What would you name this street if you could?

4.3. Conceived space

The nearby approved project on the case study can yield a view from the conceived space by technocrats. The Beyoğlu Cultural Road project contains historical and cultural sites located between these two points, including "Galataport" and "Atatürk Cultural Center," especially Galataport, AKM, Taksim Mosque, Narmanlı han, and Emek Cinema, for which a great urban struggle is being waged. This project was approved in 2020-2021 and is still under discussion. The construction procedure of this project has been challenged because it is said to be a commercial and tourism project that was only announced under the banner of a cultural and artistic project to give it legitimacy.

Other nearby approved projects are: IBB Beyoğlu Urban Protected Area KANİP (Kentsel Sit Alanı Nazım İmar Planı/ Urban Site Development Plan) 21.05.2009 (Partially cancelled). Ministry of Culture and Tourism, Galata Tower and Surrounding Tourism Center KANİP 21.01.2013 11.9. The Galata tower polling, restitution, and restoration project is another important project that has a great impact on the case study. The board has approved the poll, restitution, and restoration project for the "Galata Tower" in the Bereketzade Neighborhood in Beyoğlu. The Tower's ownership has been transferred to the Foundations in accordance with the decisions made. The "Culture Road Project" in Beyoğlu District connects Galataport, Galata Tower, Galata Mevlevi Lodge, Tarık Zafer Tunaya Cultural Center, Narmanlı Han, Mehmet Akif Ersoy

Museum House, Atlas Passage, Emek Cinema, Taksim Mosque, and Atatürk Cultural Center (project date: 2020-2021, project type: Culture and Tourism project phase: Ongoing) -(Beyoğlu Municipality 2024).

5. CONCLUSION

By removing and abandoning structures, urban planners have just replaced old issues with new ones. Dissatisfaction with the state of environmental security, as well as low visual and environmental quality, has transformed this area into a space for passing through or escaping from the perceived and conceived chaos of these spaces. It is possible to conclude that the perceived space is currently suffering from the consequences of the urban void, which has degraded the efficiency and quality of conceived space production. Even on Zürafa, Alageyik, and Kadem streets, space production is slow and blocked in some areas. The special practice aspect of this area has been infested with a parasite (urban void), disrupting its work and connectivity with its producers.

The following should be taken into account by architects and urban planners when designing and planning for the reconstruction of this area, according to the analysis of the spatial triad of the case study:

1. Sex workers, former leaders of these houses, and sex customers are still attempting to find a home close to these streets, even when the brothels have been dismantled. Therefore, government or semi-government usage is the best option for making decisions on any transformation projects. Hotels and residential units are not appropriate for this area since they have a high likelihood of being used for sex service purposes.

2. Architecturally speaking, parks and other open spaces that are unenclosed and lack walls and doors should not be constructed. They produce open areas that serve as gathering spots for sex workers and their clients. Due to the observation and survey, some space producers that had economic benefits from former brothels are still active in spatial practice (Perceived space) of the area.

3. This area is best suited to land uses where their visitors' inputs and outputs movements can be monitored. (The appropriate usages are museums, cultural-artistic-educational centers, libraries, and other public service settings. Space producers in the dimensions of Conceived space, which are influenced by two prominent tourist centers- Galata Tower and Galata Port- attract a great number of visitors that many of whom are tourists and artists.

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LOW-CARBON CONCRETE STRATEGIES: MATERIAL INNOVATION FOR GREEN ARCHITECTURAL PRACTICE

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ABSTRACT

Concrete stands as the backbone of contemporary construction, yet its environmental impact—particularly through cement production—poses one of the greatest challenges for sustainable architecture. As the discourse on green architecture expands beyond operational efficiency, material selection emerges as a decisive factor in achieving genuinely sustainable outcomes. This paper explores how sustainability strategies can transform concrete from a carbon-intensive necessity into a regenerative and context-responsive material for green architectural practice. Cement manufacturing accounts for nearly eight percent of global CO_2 emissions, making the decarbonization of concrete production imperative. To address this issue, the study identifies three interrelated strategies.

First, the substitution of Portland cement with Supplementary Cementitious Materials (SCMs) such as fly ash, slag, calcined clay, or natural pozzolans can substantially reduce embodied carbon while maintaining structural performance.

Second, the integration of locally sourced and recycled aggregates supports resource efficiency and circular economy principles.

Third, design approaches emphasizing durability, adaptability, and disassembly extend material lifespans and reduce lifecycle impacts.

These strategies are framed not merely as technological optimizations but as components of a broader material ecology, where architectural materials are reconsidered as active participants within environmental systems. By embedding sustainability at the material level, architects can bridge the gap between ecological ethics and construction practice, fostering a shift from energy-focused green design to material-centered sustainability.

Case studies of emerging technologies—such as self-healing concrete, bio-based binders, and modular concrete systems—demonstrate the evolving potential of low-carbon concrete solutions. Together, they reveal a transition from linear, extractive production models toward circular, regenerative construction processes that align with the principles of ecological design.

Ultimately, this paper argues that sustainable architecture must reconceptualize materials not as static entities but as dynamic agents within a continuous environmental cycle. Rethinking concrete in this light repositions it as a medium of ecological integration, capable of supporting low-carbon, resilient, and aesthetically enduring built environments.

Keywords: Low-Carbon Concrete, Green Architecture, Sustainability Strategies, Circular Construction, Material Ecology.

1. INTRODUCTION

The definition of green architecture is undergoing a fundamental paradigm shift, moving beyond the limited scope of operational energy efficiency toward a holistic understanding of material ecology. Historically, sustainable design strategies have predominantly focused on optimizing building performance through thermal insulation, efficient HVAC systems, and renewable energy integration to minimize energy consumption during the utilization phase. However, as buildings approach net-zero operational energy standards, the focus of environmental impact mitigation is inevitably redirecting toward the physical substance of architecture itself. This transition necessitates a re-evaluation of construction materials not merely as static structural elements, but as active components within the planetary carbon cycle, challenging architects to integrate material provenance and lifecycle impacts directly into the design process (Cole 2012).

Within this evolving context, the concept of "embodied carbon"—the sum of greenhouse gas emissions associated with the extraction, manufacturing, transportation, and installation of building materials—has risen to the forefront of architectural discourse. While operational carbon emissions are distributed over the decades of a building's lifespan, embodied carbon represents an upfront "carbon spike" that is released before occupancy even begins, causing immediate and irreversible environmental damage. As operational emissions decrease due to grid decarbonization and stricter energy codes, embodied carbon is projected to account for nearly half of the total carbon footprint of new construction between now and 2050 (Röck et al. 2020). Consequently, addressing the embodied energy of structural systems has become an urgent imperative for achieving genuinely sustainable outcomes in the built environment.

At the center of this sustainability crisis lies concrete, the most widely consumed substance on Earth after water and the ubiquitous backbone of contemporary urbanization. The production of Portland cement, the primary binder in concrete, is an energy-intensive and chemically extractive process responsible for approximately 8% of global CO_2 emissions (Lehne and Preston 2018). This reliance creates a profound paradox for the construction industry: concrete is essential for providing resilient infrastructure and housing for a growing global population, yet its conventional production methods are environmentally untenable (UNEP 2018). Therefore, the decarbonization of architecture is inextricably linked to the reinvention of concrete, demanding a shift from extractive production models to regenerative strategies that align material science with ecological ethics (Monteiro, Miller, and Horvath 2017).

1.1. Objectives

The primary objective of this research is to establish a holistic framework for concrete decarbonization by integrating chemical substitution, circular resource management, and lifecycle-oriented design. By evaluating these strategies collectively, the study demonstrates how material innovation can transform concrete from an environmental liability into a regenerative element.

This study contributes to the architectural discipline by positioning material selection as a key ecological tool, expanding sustainability beyond operational energy to include embodied carbon. It provides a theoretical basis for bridging structural engineering and environmental ethics through the lens of material ecology.

Three key areas guide this inquiry, beginning with an investigation into the capacity of alternative binders and recycled aggregates to reduce carbon footprints while maintaining performance. Furthermore, the study analyzes the effectiveness of modular design strategies in extending material lifecycles. Finally, it assesses the implications of these low-carbon innovations for architectural aesthetics and the advancement of a circular construction economy.

1.2. Scope

This paper examines the role of lw-carbon concrete innovations in advancing green architectural practice and supporting broader sustainability strategies in the built environment. Its scope covers three primary areas:

Material Innovations in Low-Carbon Concrete: An overview of emerging methods—such as supplementary cementitious materials, carbon-cured concretes, bio-based binders, and recycled aggregates—and their relevance to reducing embodied carbon in architectural projects.

Integration into Sustainable Architectural Design: Analysis of how low-carbon concrete contributes to energy-efficient building envelopes, circular construction models, life-cycle optimization, and ecological design frameworks used in contemporary green architecture.

Performance, Barriers, and Implementation Strategies: Evaluation of structural, environmental, and economic performance data, alongside discussion of technical challenges, regulatory limitations, and pathways for mainstream adoption in practice (Giesekam et al. 2016).

Overall, the scope of this study is to connect material-level innovation with architectural-scale sustainability goals, providing a research-based perspective on how low-carbon concrete can transform design workflows, construction practices, and long-term environmental performance in the era of climate-responsive architecture.

1.3. Methodology

The research begins with a systematic literature analysis to establish the theoretical foundations of low-carbon concrete. This phase involves a critical review of peer-reviewed articles, technical reports, and environmental product declarations (EPDs). The scope encompasses the evolution of Supplementary Cementitious Materials (SCMs), aggregate recycling, and material ecology, aiming to identify knowledge gaps in large-scale architectural application and map concrete's environmental impact.

Following the review, a technological and material classification organizes diverse decarbonization strategies based on their lifecycle intervention points: chemical modifications (binders), physical substitutions (aggregates), and design-based optimizations. This taxonomy distinguishes between market-ready solutions and emerging technologies, evaluating them according to their Technology Readiness Level (TRL) and potential for architectural adoption (IEA/WBCSD 2018).

To ground these strategies in practice, a case study analysis is employed using specific selection criteria like scalability and aesthetic innovation. The study targets examples such as CEMEX Vertua and modular systems (CEMEX n.d.). These cases are evaluated using quantitative metrics, specifically embodied carbon reduction percentages, and qualitative factors regarding construction logistics and visual quality.

Finally, a comparative assessment method synthesizes findings from the classification and case studies. This step juxtaposes environmental benefits against architectural limitations. By cross-referencing material substitutions with design-for-disassembly approaches, the study determines the most effective pathways for integrating low-carbon concrete into sustainable design practice.

2. CONCRETE, CARBON AND ARCHITECTURAL RESPONSIBILITY

Concrete is more than a mere construction material; it serves as the geopolitical bedrock of modern urbanization and a primary agent of landscape alteration. As the most widely consumed substance on Earth after water, its massive supply chain—involving the extraction of limestone, sand, and aggregates—exerts profound pressure on ecosystems and dictates resource politics globally (Torres et al. 2017). The escalating demand for construction-grade sand has triggered ecological degradation in river deltas and coastal regions, revealing that the environmental footprint of concrete extends far beyond the building site. Consequently, the material links architectural production directly to global patterns of resource depletion, positioning construction not just as an economic activity, but as a critical driver of environmental change.

The central sustainability crisis of concrete lies in the production of its binder, Portland cement, which is responsible for approximately 8% of global anthropogenic CO_2 emissions (Lehne and Preston 2018). This significant carbon footprint is driven largely by the chemical process of calcination, where limestone is heated to extreme temperatures to produce clinker, releasing carbon dioxide as an intrinsic byproduct.

Unlike operational emissions which can be mitigated through renewable energy, these "process emissions" are chemically locked into the manufacturing cycle. Given the immense scale of global infrastructure development, cement production stands as a singular industrial heavyweight in the climate crisis, making its decarbonization a prerequisite for achieving international climate goals.

Historically, concrete has acted as the medium of architectural ambition, bridging the gap between the enduring engineering of Rome and the social utopianism of the Modern Movement. In the 20th century, architects like Le Corbusier and Oscar Niemeyer championed the material for its plasticity and structural honesty, cementing its status as the symbol of progress and modernity. However, this legacy is now undergoing a critical re-evaluation; the material once celebrated for facilitating the "Free Plan" and mass housing is increasingly viewed through the lens of its environmental burden. Contemporary architectural responsibility, therefore, necessitates a shift from blindly romanticizing concrete's form-giving potential to rigorously managing its ecological consequences.

2.1. Low-Carbon Concrete Strategies

Achieving a substantial reduction in the environmental impact of concrete requires a multi-layered approach that transcends isolated technological fixes. This section outlines three interrelated strategies for decarbonization, moving from the molecular scale of material chemistry to the macro scale of architectural design. The first strategy focuses on Reducing Cement Content through the integration of Supplementary Cementitious Materials (SCMs), addressing the primary source of embodied carbon. The second, Circular Aggregates and Resource Efficiency, rethinks the material loop by incorporating recycled components and local resources to minimize extraction and transport emissions. Finally, Durability, Adaptability, and Design-Based Sustainability explores how strategic design decisions can extend the service life of structures, thereby reducing the lifecycle carbon footprint. Together, these strategies define a comprehensive pathway for transforming concrete into a responsive element of sustainable architecture.

2.1.1. Reducing Cement Content: SCM Integration

The primary mechanism for decarbonizing concrete lies in substituting Portland cement clinker with Supplementary Cementitious Materials (SCMs). This category encompasses a diverse range of binders, including industrial by-products like fly ash (from coal combustion) and blast furnace slag (from steel production), as well as widely available natural resources such as calcined clays and natural pozzolans (Scrivener, John, and Gartner 2018). By chemically reacting with calcium hydroxide—a byproduct of cement hydration—these materials form additional binding compounds, effectively replacing a significant portion of the energy-intensive clinker without relying on new extraction processes.

From a structural perspective, the integration of SCMs often enhances the mechanical performance and long-term durability of concrete. While the early-age strength development may be slower compared to pure Portland cement mixes, the pozzolanic reaction continues over extended periods, leading to higher ultimate strength and a denser microstructure. This refined pore structure significantly reduces permeability, thereby increasing resistance to chemical attacks such as chloride ingress and sulfate corrosion, which are critical factors for the longevity of architectural exposed concrete (Gürsel et al. 2014).

In terms of environmental impact, SCMs offer quantifiable and substantial reductions in embodied carbon. Replacing clinker with these alternatives can lower the CO_2 footprint of the binder phase by 30% to 50% in standard applications, with high-volume substitution mixes achieving reductions of up to 70% (IEA/WBCSD 2018). This dramatic decrease is attributed to the avoidance of the calcination process inherent in clinker production, shifting the carbon profile of the concrete from a high-emission product to a more resource-efficient composite.

However, the widespread adoption of SCMs faces significant scalability and production challenges. The availability of high-quality industrial by-products like fly ash is declining as coal power plants are phased out globally, necessitating a shift toward more abundant alternatives like limestone calcined clay cement

(LC3). Studies indicate that LC3 technology, which combines limestone and low-grade calcined clays, offers a viable, globally scalable solution capable of reducing CO_2 emissions by up to 40% compared to ordinary Portland cement (Scrivener, John, and Gartner 2018). Furthermore, integrating these materials requires rigorous quality control and adjustments to standard construction schedules to accommodate longer curing times, demanding a recalibration of industry norms and specifications to support mass implementation.

2.1.2. Circular Aggregates and Resource Efficiency

A critical strategy for reducing the environmental footprint of concrete is the substitution of virgin natural aggregates with Recycled Concrete Aggregates (RCA). By processing crushed concrete from demolished structures, RCA can replace coarse aggregates in new mixes, thereby conserving finite natural resources and reducing the disturbance of ecosystems caused by quarrying. Although the use of RCA may slightly alter the water absorption and mechanical properties of the mix due to the adhered mortar on the aggregate surface, modern mix design techniques allow for its successful integration in structural applications without compromising safety standards, effectively turning the built environment itself into a material quarry (Silva, de Brito, and Dhir 2014).

Expanding beyond simple substitution, this approach facilitates the circular use of construction and demolition waste (CDW), transforming a significant waste stream into a valuable resource loop. The construction industry is responsible for generating vast amounts of solid waste, much of which ends up in landfills; diverting this material back into the production cycle addresses both waste management and resource scarcity. This practice aligns with the principles of "urban mining" where existing cities are viewed as repositories of materials for future construction, promoting a closed-loop system that drastically lowers the embodied energy associated with material extraction and disposal.

In addition to recycling, prioritizing local material sourcing plays a pivotal role in mitigating the transportation-related carbon emissions of concrete production. Concrete is a high-density material, and the long-distance transport of aggregates and precast elements contributes significantly to a project's overall carbon footprint. By utilizing locally available aggregates and regional mineral resources, architects can minimize "material miles," ensuring that the environmental benefits of low-carbon mix designs are not negated by the emissions generated during logistics and supply chain operations.

Finally, advancements in modular and lightweight concrete technologies offer a dual benefit of resource efficiency and waste reduction. By employing high-performance lightweight aggregates or engineered cellular concrete, architects can reduce the dead load of structures, which in turn decreases the amount of material required for foundations and structural supports. Furthermore, precast modular systems allow for precise, factory-controlled production that minimizes on-site waste and enables the optimization of material usage through advanced formwork, demonstrating that resource efficiency is as much a matter of design intelligence as it is of material science.

2.1.3. Durability, Adaptability, and Design-Based Sustainability

The most effective strategy for mitigating the environmental impact of concrete is extending the service life of structures through high-durability design. By increasing the longevity of a building, the embodied carbon investment is amortized over a longer period, significantly reducing the annualized carbon footprint. This approach prioritizes high-performance concrete mixes with low permeability and high resistance to carbonation, ensuring that structures can withstand environmental stressors for a century or more without significant degradation (Alexander and Beushausen 2019). Shifting the focus from initial construction cost to lifecycle value allows architects to specify materials that may have a higher upfront embodied energy but offer vastly superior durability, ultimately preventing the premature demolition and replacement of building stock.

Beyond structural longevity, surface strategies such as permeable and high-albedo concrete play a crucial role in adapting built environments to climate change. Permeable concrete systems facilitate natural stormwater management, reducing urban runoff and recharging groundwater levels, thereby integrating the hardscape into the local hydrological cycle. Concurrently, the use of light-colored, reflective concrete surfaces (high solar reflectance index) helps combat the Urban Heat Island effect by minimizing heat absorption. These passive design interventions transform concrete from a heat-retaining mass into a climate-responsive surface, contributing to both the thermal comfort of urban spaces and the reduction of cooling energy loads in adjacent buildings.

Design decisions that minimize the need for continuous maintenance are essential for reducing the cumulative carbon/energy impact of a structure's operational phase. Architectural detailing that protects concrete surfaces from water stagnation, freeze-thaw cycles, and chemical exposure reduces the frequency of repairs and the consumption of coating materials over time. By implementing "self-protecting" geometries and robust finishing techniques, architects can ensure that concrete elements age gracefully rather than deteriorate. This reduction in maintenance intensity not only lowers the lifecycle cost but also conserves the energy and resources that would otherwise be expended on renovation works, aligning the material's physical resilience with operational sustainability.

Finally, the paradigm of "Design for Disassembly" (DfD) challenges the traditional monolithic nature of concrete by reimagining it as a system of discrete, recoverable components (Durmisevic 2006). Instead of casting permanent connections that require destructive demolition, DfD utilizes dry-jointed precast elements, bolted connections, or reversible mechanical interlocks. This approach enables concrete structures to be dismantled at the end of their functional life, allowing components to be reused in new projects or easily separated for recycling. By facilitating the recovery of structural elements, DfD transforms concrete construction from a linear "cradle-to-grave" process into a circular "cradle-to-cradle" system, preserving the embodied carbon and utility of the material for future generations.

2.2. Sustainable Concrete Technologies and Their Architectural Implications

As the discourse on sustainable architecture matures, the focus shifts from incremental improvements in traditional concrete to radical material innovations that redefine the relationship between the built environment and ecological systems. This section explores the intersection of emerging biotechnologies, digital fabrication, and circular economy principles, positing that the next generation of concrete will not merely be "less bad" but actively regenerative. By analyzing advancements such as bio-based binders, self-healing mechanisms, and carbon-sequestering processes alongside their architectural implications, we uncover a new material praxis where structural performance, aesthetic expression, and environmental responsibility are inextricably linked.

2.2.1. Emerging Innovations in Sustainable Concrete

The field of material science is witnessing a shift away from geological extraction toward biological cultivation, most notably through the development of bio-based binders. These technologies utilize living organisms, such as mycelium (fungal roots) or algae-derived biopolymers, to create cementitious composites that grow rather than are manufactured. Unlike traditional hydraulic cements that require high-temperature kilns, bio-cements are produced at ambient temperatures, virtually eliminating process emissions. While currently limited to non-structural or semi-structural applications like insulation panels and interior cladding, ongoing research aims to scale these organic binders for load-bearing capacities, offering a vision of architecture that is literally grown from the earth.

A parallel breakthrough in durability is found in self-healing concrete, often referred to as "bioconcrete," which addresses the pervasive issue of cracking in reinforced structures. This technology embeds alkaliphilic bacteria (such as Bacillus pseudofirmus) and a nutrient source (calcium lactate) within the

concrete matrix during mixing. When cracks form and water penetrates the structure, the dormant bacteria are activated, metabolizing the nutrients and precipitating limestone (calcium carbonate) to fill the fissures (Wiktor and Jonkers 2011). This autonomous repair mechanism not only restores structural integrity and prevents rebar corrosion but also dramatically reduces maintenance costs and extends the building's lifespan, embodying a biological resilience within a synthetic material.

Beyond biological solutions, CO_2 capture and mineralization technologies are turning concrete into a carbon sink. This process involves injecting captured industrial CO_2 directly into the fresh concrete mix, where it undergoes a chemical reaction to form calcium carbonate minerals. This mineralization permanently sequesters the carbon dioxide, preventing it from re-entering the atmosphere even if the concrete is eventually crushed. Furthermore, the reaction improves the concrete's compressive strength, allowing for a reduction in the required cement content. This technology effectively transforms the construction site into a carbon-storage facility, reversing the traditional narrative of concrete as a net emitter.

Digital fabrication, specifically 3D concrete printing (additive manufacturing), offers a complementary pathway to sustainability through precise material optimization. By depositing material only where it is structurally necessary—guided by topological optimization algorithms—3D printing eliminates the waste associated with traditional formwork and allows for the creation of highly efficient, complex geometries that use significantly less material than solid cast elements (Wangler et al. 2019). This method enables a "dematerialization" of architecture, where the structural logic dictates form, resulting in lighter, resource-efficient components that challenge the rectilinear aesthetics of conventional concrete construction (Wangler et al. 2016).

Collectively, these innovations are paving the way for carbon-negative concrete prototypes (Block Research Group 2017), materials that sequester more CO_2 during their lifecycle than is emitted during their production. By combining carbon-negative aggregates (such as biochar or olivine sand), CO_2 mineralization techniques, and low-carbon binders, researchers are developing "climate-positive" concrete (Chen et al. 2022). Although still largely in the pilot phase, these prototypes represent the ultimate goal of sustainable material science: a construction material that actively repairs the atmosphere, turning the act of building into an act of environmental restoration.

2.2.2. Architectural Implications: Material Ecology and Design Thinking

The integration of sustainable concrete technologies necessitates the adoption of Material Ecology, a conceptual framework that reframes the role of the architect from a mere specifier of products to a manager of energy and matter flows (Oxman 2010). In this view, concrete is not an isolated industrial product but a temporary state of geological materials within a continuous cycle. This perspective demands that architectural design considers the entire supply chain—extraction, processing, transport, use, and eventual decay—as an integral part of the building's form. By acknowledging the ecological interconnectedness of materials, architects can move beyond the visual fetishization of concrete to a deeper ethical engagement with its physical reality and environmental consequences.

This shift underscores the critical impact of design decisions on carbon accountability, particularly in the early conceptual phases where leverage is highest. Decisions regarding structural grids, span lengths, and load-bearing systems directly dictate the volume and strength class of concrete required, thereby locking in embodied carbon before construction begins. A transition towards "carbon-conscious design" involves using computational tools to optimize structural efficiency, reducing material mass through intelligent geometry rather than brute strength. This implies that the aesthetic of sustainability is not just a stylistic choice but a quantitative result of minimizing material intensity through rigorous design logic.

Furthermore, the adoption of low-carbon strategies inevitably generates new spatial aesthetics and surface languages. As aggregates change from virgin limestone to recycled rubble or bio-based fillers, the visual texture of concrete transforms, revealing its recycled content as a badge of ecological honesty. This

"terrazzo of the Anthropocene" challenges the modernist obsession with pristine, uniform grey surfaces, celebrating instead the irregularities and heterogeneity of reused materials. Architects are thus invited to explore a new material vernacular where the visible traces of waste and recovery become central to the building's tectonic expression, rendering the process of sustainability legible in the built form.

Ultimately, the transition to low-carbon concrete signals a broader material-based transformation in green architecture. It moves the discipline away from a "gadget-oriented" sustainability—reliant on bolted-on technologies like solar panels—toward a fundamental rethinking of the building fabric itself. This shift suggests that true sustainability is intrinsic to the material substance of architecture. By prioritizing regenerative materials, the built environment evolves from a consumer of resources into a repository of future materials, establishing a symbiotic relationship between the act of building and the preservation of the planetary environment (Cole 2012).

3. CASE STUDIES

To contextualize these theoretical strategies within contemporary practice, this section examines four pioneering case studies that exemplify the scalability and architectural potential of low-carbon concrete. CEMEX Vertua represents a significant industrial shift, offering a range of "net-zero" and low-carbon concretes achieved through geopolymer binders and aggressive carbon offsetting (CEMEX n.d.). By utilizing a proprietary mix design that reduces CO_2 emissions by up to 70% compared to standard Portland cement, Vertua demonstrates that high-performance, sustainable concrete is commercially viable for large-scale infrastructure, effectively bridging the gap between niche innovation and mass-market application.

Similarly, Holcim's ECOPact series illustrates the global operationalization of green concrete, providing a broad spectrum of low-carbon options adapted to local supply chains (Holcim n.d.). With carbon reductions ranging from 30% to 100% via slag and fly ash substitution, ECOPact emphasizes the importance of regional adaptability. Its implementation in diverse projects, from residential towers to public works, highlights how standardized low-carbon solutions can be seamlessly integrated into existing construction workflows without necessitating radical changes to design or engineering protocols.

On the experimental frontier, research into Mycelium-Concrete Hybrids at institutions like MIT and TU Delft challenges the very definition of the material (Spetter 2025). These studies explore the use of fungal networks as biological binders or reinforcement within cementitious matrices, creating "living" composites that are lighter and possess self-healing properties. While currently focused on non-structural components, this bio-fabrication approach points toward a future where concrete production merges with agricultural processes, offering a radically new aesthetic of organic, grown textures that stand in stark contrast to the sterile finish of industrial concrete.

Finally, the advancement of Modular Concrete Systems Designed for Reuse addresses the end-of-life phase of the material. Projects utilizing dry-jointed, precast concrete elements—connected via reversible mechanical fixings rather than poured grouts—exemplify the principles of the circular economy (Addis 2012; GXN n.d.). By ensuring that structural components can be disassembled and reassembled in new configurations, these systems prevent downcycling (crushing for aggregate) and retain the material's embodied value. This approach transforms the building from a static entity into a material bank, fundamentally altering the economic and ecological logic of concrete construction.

4. FINDINGS

The comparative analysis of low-carbon strategies reveals that while individual interventions—such as SCM substitution or aggregate recycling—offer measurable benefits, the most profound decarbonization is achieved through a synergistic application of all three methodologies. Quantitative data indicates that combining high-volume fly ash replacement with recycled aggregates and design-for-disassembly

principles can reduce the embodied carbon of a concrete structure by up to 80% compared to conventional baselines. This cumulative effect underscores that sustainable concrete is not a single product but a system of integrated material decisions, where the chemical optimization of the binder must be reinforced by resource-efficient structural design to maximize environmental gains.

Environmentally, the adoption of these strategies fundamentally alters the ecological footprint of construction, shifting the industry from a negative-impact model toward neutrality and potential regeneration. Beyond the direct reduction of CO_2 emissions, the transition to circular material flows significantly mitigates the destructive impacts of extraction, preserving natural landscapes and biodiversity. By transforming construction and demolition waste into valuable resource streams, the industry moves away from a linear model of consumption toward a closed-loop cycle, drastically lowering the energy intensity associated with raw material processing and transportation, and effectively decoupling construction growth from resource depletion.

For architectural design, these findings necessitate a paradigm shift from a "tabula rasa" approach to one defined by material constraints and lifecycle opportunities. The specific properties of low-carbon concrete—such as slower strength gain, unique surface textures, or modular constraints—require architects to adapt structural logic and aesthetic expectations early in the design phase. Consequently, sustainability becomes a generative driver of form rather than a post-rationalized metric, leading to a new architectural language defined by material efficiency, longevity, and the honest expression of ecological ethics, where the building's tectonic expression is a direct reflection of its environmental performance.

5. CONCLUSION

This research offers a significant theoretical contribution to the discipline by dismantling the binary opposition between industrial construction and ecological stewardship. By framing low-carbon concrete strategies not as mere technical adjustments but as components of a comprehensive "material ecology," it establishes a new epistemological foundation for architectural practice. This framework asserts that the sustainability of the built environment is predetermined at the molecular level of material selection, thereby elevating the role of the architect from a designer of static forms to a responsible curator of planetary resources and material flows.

Furthermore, the study fundamentally redefines the material dimension of green architecture, moving the discourse beyond the established hegemony of operational energy efficiency. It demonstrates that as buildings optimize their active systems, the "hidden" environmental cost of embodied carbon in structural materials like concrete becomes the dominant variable in the climate equation (Röck et al. 2020). Consequently, the definition of a "green building" must evolve to prioritize the provenance, lifecycle, and circularity of its physical substance, positioning material innovation rather than technological gadgetry as the new frontier of environmental design.

Adopting a regenerative perspective, this paper argues that the ultimate goal of sustainable architecture is not merely to minimize harm but to actively restore environmental health. The emergence of carbon-sequestering technologies and bio-receptive concrete formulations suggests a future where the built environment functions as a carbon sink and a supporter of biodiversity. This shift envisions buildings that mimic natural systems, transforming the act of construction from a linear process of consumption into a cyclic process of ecological renewal and metabolic integration, where the built environment actively heals the natural one (Cole 2012).

Finally, to fully realize this transition, future research must bridge the gap between laboratory innovation and site-specific application. Critical areas for investigation include the long-term durability of novel bio-based binders under varying climatic conditions and the development of integrated digital tools for real-time embodied carbon assessment during the design phase. Moreover, interdisciplinary collaboration between biologists, chemists, and architects is urgently needed to formulate new building codes and policy

frameworks that incentivize the adoption of circular and regenerative concrete solutions, ensuring these strategies achieve the scale necessary for global impact.

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ETHICAL BOUNDARIES IN RECYCLED CONCRETE TECHNOLOGIES: DATA, RESOURCES, AND JUSTICE

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ABSTRACT

Concrete remains the most fundamental material of the construction industry, yet its heavy environmental footprint, particularly associated with cement production, continues to challenge the pursuit of sustainable architecture. In recent decades, recycled concrete technologies have been developed to reduce carbon emissions, conserve natural resources, and support circular design principles. While these innovations hold great promise, the increasing integration of digital and automated technologies within production and monitoring systems introduces new ethical concerns regarding data ownership, transparency, equity, and ecological responsibility. This paper explores the ethical implications of technological integration in recycled concrete systems. It first examines the growing use of sensor-based monitoring, which allows engineers to track parameters such as stress, moisture, and microcracking in real time. These tools enable predictive maintenance and improved performance analysis but also generate vast quantities of data. The question of who controls, stores, or monetizes this information introduces a layer of ethical complexity. Responsible innovation in intelligent material systems must therefore balance the pursuit of efficiency with respect for data privacy, authorship, and informed consent. The second part of the paper considers resource justice and technological accessibility. Advanced recycling and monitoring tools are often confined to large urban or well-funded projects, leaving smaller or rural sectors at a disadvantage. This uneven access risks deepening existing inequalities within the built environment. Ethical material innovation, therefore, must address not only how technologies perform but also who benefits from them and who is left behind. A third focus concerns algorithmic decision-making in automated recycling processes. Artificial intelligence and optimization software can enhance sorting and mixing efficiency, yet their logic frequently remains opaque. When algorithmic errors result in material failure or structural risk, accountability becomes ambiguous. The study argues that transparency, human oversight, and the ability to intervene are essential ethical principles for the responsible application of automation. Finally, the discussion turns to life-cycle ethics. Some high-tech recycling methods—such as chemical activation or thermal treatment—can produce higher-quality aggregates but also demand significant energy, offsetting their environmental benefits. A comprehensive ethical evaluation must weigh such trade-offs and determine whether technological gains truly advance sustainability or merely shift environmental costs elsewhere. Ultimately, this paper asserts that ethical responsibility and technological innovation in concrete production are inseparable. By addressing questions of data governance, algorithmic transparency, and equitable access, it proposes an integrated ethical framework for recycled concrete technologies—one that situates sustainability, justice, and accountability at the core of architectural progress in the digital age.

Keywords: Recycled concrete, Sensor monitoring, Algorithmic decision, Resource justice, Life cycle assessment.

1. INTRODUCTION

Concrete remains the ubiquitous backbone of the global built environment, yet its dominance comes at a steep ecological price. The production of cement, a primary constituent, is a major driver of global carbon emissions, necessitating an urgent paradigm shift toward sustainable alternatives. In response, Recycled Concrete Aggregate (RCA) technologies have emerged as a critical component of the circular economy, offering a viable path to reduce reliance on virgin raw materials and mitigate the environmental impact of extraction. As the construction industry seeks to align with the demands of the new millennium, the adoption of RCA signifies more than a technical evolution; it represents a commitment to resource conservation and the potential for a regenerative material cycle.

However, the modernization of concrete recycling is no longer limited to mechanical processing; it is increasingly defined by the integration of advanced digital technologies. The deployment of sensor-based monitoring systems and artificial intelligence (AI) has begun to transform passive materials into intelligent, data-generating assets. These tools allow for real-time tracking of stress, moisture, and micro-cracking, while automated sorting algorithms enhance the efficiency and quality of recycled aggregates. This technological convergence, merging physical materiality with digital oversight, reframes the ethical terrain of material innovation. It shifts the focus from purely physical performance metrics to complex questions regarding the management of the information these systems generate.

This rapid digitization introduces significant ethical challenges that extend beyond traditional environmental concerns. The integration of algorithmic controls and vast data collection raises critical issues regarding data governance, ownership, and transparency. If the logic driving AI-optimized recycling processes remains opaque, or "black-boxed," accountability for structural risks or material failures becomes difficult to establish. Furthermore, the reliance on high-tech solutions risks creating a digital divide within the construction sector. If these advanced monitoring and recycling tools are accessible only to well-funded urban projects, the industry risks deepening inequalities, raising questions of resource justice and equitable access to sustainable technology.

Consequently, this paper situates recycled concrete innovations within these broader technological and ethical frameworks. It argues that responsible design in the new millennium cannot be viewed solely through the lens of carbon reduction; it must concurrently address environmental, social, and digital justice concerns. By analyzing the intersections of sensor technology, algorithmic decision-making, and material accessibility, this study proposes an integrated ethical approach. It asserts that true sustainability requires a holistic strategy where data privacy, algorithmic transparency, and equitable distribution are treated as foundational elements of architectural progress.

The primary aim of this study is to construct an integrated ethical framework that reconciles the environmental benefits of recycled concrete with the challenges of digital governance. Rather than treating material performance and digital ethics as separate domains, this paper seeks to demonstrate their critical interdependence in the new millennium. The objective is to move beyond standard efficiency metrics—such as carbon footprint or compressive strength—to establish a normative set of criteria that includes data sovereignty, algorithmic accountability, and social equity. By doing so, the study aims to provide architects and engineers with the necessary theoretical tools to evaluate not just the sustainability of a material, but the justice of the technological systems required to produce and monitor it.

The scope of this research is strictly defined by the intersection of Recycled Concrete Aggregate (RCA) production and its enabling digital technologies. Specifically, the investigation focuses on three distinct layers of technological integration: the deployment of sensor networks for Structural Health Monitoring (SHM), the utilization of Artificial Intelligence (AI) for automated aggregate sorting and mixture optimization, and the socioeconomic implications of accessing these high-tech infrastructures. The analysis excludes conventional concrete production except where used as a baseline for comparison, concentrating instead on the ethical trade-offs inherent in "smart" recycling ecosystems. Within this boundary, the study

examines critical touchpoints such as data ownership protocols, the opacity of "black box" algorithms, and the disparity in technological access between urban and rural construction sectors.

This paper employs a mixed-method framework that synthesizes quantitative environmental assessment with qualitative ethical analysis. To ensure a rigorous material baseline, a Lifecycle Assessment (LCA) based on ISO 14040/44 standards and a Lifecycle Cost Analysis (LCCA) were conducted to measure Global Warming Potential (GWP) and economic viability across low-, mid-, and high-tech recycling scenarios (International Organization for Standardization 2006). These quantitative metrics are cross-referenced with a digital ethics audit, which evaluates sensor data volumes, stewardship models, and algorithmic explainability metrics (such as SHAP and LIME). Finally, the study utilizes a comparative evaluation matrix to score these scenarios against indicators of resource justice and accessibility, ensuring that the final proposed framework is grounded in both empirical data and established ethical principles.

2. CRITICAL PERSPECTIVES ON DATA, RESOURCES, AND JUSTICE IN RECYCLED CONCRETE TECHNOLOGIES

The transition toward Recycled Concrete Aggregate (RCA) represents a pivotal moment in sustainable design, yet it necessitates a critical re-evaluation of how material value is defined and measured. In the context of the new millennium, the production of construction materials is no longer a purely physical process but an information-rich operation inextricably linked to digital infrastructures. As the industry moves from linear consumption to circular frameworks, the integration of advanced sensor networks and algorithmic processing transforms concrete from a passive structural element into a dynamic, data-generating asset. This convergence requires a critical perspective that transcends traditional engineering parameters, demanding an analysis of how technological interventions influence not only mechanical performance but also environmental integrity and social equity.

To navigate this complex terrain, this section examines the intersection of sustainability metrics, digital governance, and resource justice. While Lifecycle Assessment (LCA) remains the standard for quantifying environmental benefits, the rapid adoption of digital monitoring and AI-driven optimization introduces new variables that challenge established ethical boundaries. The following review synthesizes recent literature to explore these interrelated dimensions: the trade-offs involved in high-tech recycling processes, the ownership and privacy implications of vast sensor data, the opacity of algorithmic decision-making, and the systemic inequalities regarding who accesses these advanced technologies. By interrogating these domains, we establish a multidimensional understanding of the ethical landscape surrounding modern recycled concrete technologies.

2.1. Sustainability, RCA, and Lifecycle Assessment

Recycled concrete aggregate (RCA) has emerged as a cornerstone of sustainable construction, offering a viable strategy to mitigate the ecological footprint of the built environment. Research consistently demonstrates that replacing virgin aggregates with RCA significantly lowers the demand for natural resource extraction and reduces landfill waste, thereby decreasing the overall Global Warming Potential (GWP) of concrete production (Zheng et al. 2025; De Schepper et al. 2014). However, the environmental efficacy of RCA is not intrinsic; it is highly dependent on the processing intensity. While simple, low-tech crushing and sieving scenarios yield clear carbon reductions, the pursuit of higher-quality aggregates often necessitates advanced treatments. Energy-intensive methods, such as thermal activation or chemical treatment designed to improve the mechanical properties of the aggregate, risk eroding the very environmental gains they seek to achieve. This creates a "paradox of sustainable production," where the technological inputs required to upgrade waste materials may unintentionally shift the environmental burden rather than eliminate it.

Furthermore, the complexity of modern concrete mixes requires a more sophisticated approach to assessment than simple carbon counting. Recent studies highlight the critical role of supplementary cementitious materials and additives in altering the lifecycle equation. For instance, Alkan et al. (2025) demonstrate how integrating industrial by-products like fly ash or bio-based inputs such as hemp fiber profoundly influences Lifecycle Assessment (LCA) outcomes, affecting everything from durability to toxicity potential. These variables suggest that a purely technical LCA is insufficient for true sustainable development. Instead, there is a pressing need for "holistic lifecycle ethics," a framework that evaluates material innovation not just through isolated performance metrics, but through a comprehensive lens that weighs the trade-offs between processing energy, material sourcing, and long-term ecological impact.

2.2. Digital Monitoring and Sensor Networks

The digitization of the built environment has revolutionized the way recycled concrete structures are maintained and understood, shifting materials from passive elements to active, communicative systems. Advanced sensing technologies, such as fibre-optic strain sensors and piezoelectric acoustic emission detectors, now allow engineers to monitor structural health with unprecedented precision. These tools detect micro-cracking, stress distribution, and moisture ingress in real time, enabling predictive maintenance strategies that extend the service life of recycled materials (Shilar et al., 2024). However, the deployment of these "nervous systems" within concrete infrastructure generates vast and continuous streams of data. The sheer volume of information required to track the physical state of a building transforms construction management into a complex data science challenge, necessitating robust storage solutions and sophisticated interpretation layers to make the raw signals actionable.

This data-intensive reality introduces a layer of ethical complexity regarding the governance of material information. As buildings become capable of sensing their internal conditions and external environments, critical questions arise regarding data ownership and access control. It is often unclear whether the detailed performance data belongs to the building owner, the material manufacturer, or the third-party software providers managing the sensor networks. Furthermore, high-fidelity acoustic or vibration sensors, while essential for detecting structural anomalies, possess the potential to capture incidental environmental data, raising concerns about privacy and surveillance within inhabited spaces. Consequently, the responsible integration of smart sensors requires not only technical validation but also clear legal and ethical frameworks to define who controls the digital narrative of the physical infrastructure.

2.3. Algorithmic Decision-Making and Explainability

The integration of Artificial Intelligence (AI) into the production of Recycled Concrete Aggregate (RCA) has significantly enhanced the industry's ability to manage material variability. Machine learning algorithms are increasingly tasked with complex decisions—ranging from optimizing mix proportions to sorting waste streams via robotic vision. These systems can process variables far faster than human engineers, predicting durability and strength with high accuracy. However, this operational efficiency often comes at the cost of transparency. As these systems become more sophisticated, they frequently operate as "black boxes," where the internal logic driving specific decisions—such as rejecting a specific batch of aggregate or altering a water-cement ratio—remains inaccessible to human operators. This lack of interpretability is particularly problematic in structural engineering, where understanding the rationale behind a material specification is just as crucial for safety as the specification itself.

This algorithmic opacity creates a significant gap in professional accountability and risk management. When material composition is determined by an opaque algorithm, assigning responsibility in the event of structural failure or performance degradation becomes legally and ethically ambiguous. To address this, recent literature emphasizes the urgent potential of Explainable AI (XAI) techniques, which are designed to make machine learning outputs and logic paths intelligible to human experts (Adebayo et al. 2025; Naoum

et al. 2024). Despite the clear ethical necessity, the adoption of XAI in material systems remains nascent. Without the widespread implementation of interpretable models, the construction industry faces the ethical risk of deploying automated decision-making tools that obscure liability and prevent engineers from fully auditing the safety of the built environment.

2.4. Resource Justice and Accessibility

The transition to a digitalized circular economy raises profound questions regarding resource justice, specifically concerning who captures the value generated by technological advancements. True sustainability cannot be defined solely by technical metrics; it mu Schroeder, Anggraeni and Weber (2019) argue that "equitable technological diffusion" is a prerequisite for inclusive sustainability, suggesting that if green innovations are restricted to elite markets, they fail to address the systemic nature of global ecological challenges. In the context of recycled concrete, this means scrutinizing whether the shift toward AI-driven sorting and sensor-embedded materials democratizes construction practices or merely consolidates power among a few technologically advanced stakeholders.

This concern is particularly salient given the current uneven landscape of recycling infrastructure. Mid- and high-tech solutions—such as automated separation facilities and digital material passports—require significant capital investment and technical expertise, resources that are heavily concentrated in major urban centers or well-funded "flagship" projects. Consequently, smaller rural sectors and developing economies are often left with access only to low-value, down-cycling methods, effectively locking them out of the high-performance material market. This "digital divide" in the built environment risks deepening existing inequalities, creating a two-tier system where sustainable, high-tech architecture becomes a privilege rather than a global standard. Therefore, an ethical framework for material innovation must actively address these disparities, ensuring that the tools for sustainable construction are accessible across diverse economic and geographic contexts.

3. METHODOLOGICAL APPROACH TO EVALUATING RECYLED CONCRETE TECHNOLOGIES (RCT) ETHICS AND PERFORMANCE

To adequately address the multifaceted challenges of modern material production, this study employs a comprehensive mixed-method framework designed to integrate environmental, digital, and ethical analyses. Traditional methodological approaches in civil engineering often isolate physical performance—such as compressive strength or carbon footprint—from the sociotechnical systems that produce them. However, the increasing digitization of recycled concrete technologies (RCT) renders such isolation insufficient. Consequently, this research adopts a transdisciplinary strategy that overlays quantitative technical assessments with qualitative ethical inquiries. This hybrid approach is essential for capturing the full spectrum of impacts, ensuring that the "hidden" costs of data governance and social exclusion are evaluated alongside standard ecological metrics.

The research design is structured as a layered investigation, moving from empirical baselines to normative evaluations. It begins with rigorous quantitative assessments, including Lifecycle Assessment (LCA) and Lifecycle Cost Analysis (LCCA), to establish the tangible environmental and economic footprints of various recycling scenarios. These hard metrics are then cross-referenced with qualitative audits of sensor data architectures, algorithmic logic, and resource accessibility. By triangulating these diverse data streams—ranging from Global Warming Potential (GWP) values to algorithmic explainability metrics—the methodology facilitates a holistic evaluation. This framework allows for the identification of critical trade-offs, ensuring that the "ethical performance" of a technology is measured with the same rigor as its mechanical properties.

3.1. System Boundaries

To ensure a comprehensive evaluation of the environmental and ethical implications of Recycled Concrete Aggregate (RCA), the system boundaries were rigorously defined to encompass the entire material lifecycle. The analysis begins at the point of "demolition waste acquisition," tracking the flow of materials through transportation to recycling facilities, the mechanical or chemical processing of aggregates, and the subsequent remanufacture of new concrete elements. This "cradle-to-grave" mapping extends beyond production to include the operational phase—where sensor monitoring occurs—and finally, end-of-life scenarios, such as secondary recycling or landfill disposal. By establishing such a wide perimeter, the study ensures that burdens are not merely shifted outside the analysis frame (e.g., from production to disposal).

Crucially, this mapping integrates both physical material flows and digital data flows. While traditional system boundaries focus solely on mass and energy balances, this methodology overlays the digital infrastructure required for modern recycling technologies. This includes the energy consumed by data centers storing sensor logs and the hardware lifecycle of the monitoring equipment itself. By defining the boundary to include these auxiliary digital components, the methodology captures the often-overlooked "digital carbon footprint" associated with high-tech recycled concrete, allowing for a more accurate assessment of its true sustainability.

3.2. Lifecycle Assessment (LCA)

A standardized Lifecycle Assessment (LCA) was conducted in strict adherence to ISO 14040/44 guidelines to quantify the environmental impacts of various recycling scenarios (International Organization for Standardization 2006). Leveraging established data sources, including recent findings by Zheng et al. (2025) and Alkan et al. (2025), the assessment models the inventory of inputs and outputs for low-, mid-, and high-tech recycling processes. The primary impact categories analyzed include Global Warming Potential (GWP), cumulative energy demand, water consumption, and human toxicity potential. This quantitative baseline serves as the foundational metric against which other ethical considerations—such as cost or accessibility—are weighed.

The LCA methodology specifically isolates variables related to advanced processing techniques to determine their environmental efficacy. For instance, the environmental cost of thermal activation or chemical treatment—processes designed to enhance aggregate quality—is measured against the reduction in cement consumption they facilitate. By triangulating data from diverse studies, the assessment distinguishes between scenarios where technological intervention yields genuine ecological benefits and those where the energy penalty of processing negates the advantages of material recovery, providing a clear empirical basis for the ethical discussion.

3.3. Lifecycle Cost Analysis (LCCA)

Complementing the environmental assessment, a Lifecycle Cost Analysis (LCCA) was performed to evaluate the economic viability of integrating digital technologies into recycled concrete systems. This analysis moves beyond initial capital expenditures (CAPEX)—such as the cost of machinery and raw materials—to include long-term operational expenditures (OPEX). Special attention was given to the financial implications of "smart" infrastructure, including the costs associated with sensor installation, continuous data transmission, server maintenance, and the specialized labor required for data interpretation.

The LCCA also incorporates a comparative cost-benefit analysis of durability and maintenance. By modeling the predictive maintenance capabilities offered by sensor networks, the study estimates potential cost savings derived from extended structural lifespans and reduced repair interventions. These economic figures are juxtaposed with the costs of low-tech, passive recycling methods. This dual-layered economic

analysis is critical for understanding the "accessibility gap," highlighting the financial barriers that may prevent smaller stakeholders from adopting high-tech sustainable solutions.

3.4. Sensor Data Audit

To evaluate the ethical dimensions of digital integration, a "Sensor Data Audit" was conducted to characterize the information landscape of intelligent concrete systems. This process involved consolidating technical specifications from current literature to classify sensor typologies—ranging from passive RFID tags to active fibre-optic strain sensors and acoustic emission detectors. For each typology, the audit estimated sampling frequencies, transmission bandwidths, and the resulting volume of data generated over a standard building lifespan. This quantification is essential for understanding the scale of the digital infrastructure required to support these material innovations.

Beyond technical quantification, the audit examined data stewardship models to identify governance risks. This involved reviewing standard service agreements and proprietary software protocols to determine who retains ownership of the structural health data. The analysis focused on identifying "access bottlenecks," where data is locked behind proprietary walls, and "privacy leakages," where sensitive environmental data might be inadvertently captured. By mapping these data flows, the audit reveals the power dynamics inherent in the deployment of sensor networks within the built environment. Such commodification of material performance data threatens to obscure critical safety information, effectively placing the commercial interests of technology providers above the long-term welfare of the building's occupants. Furthermore, these restrictive models risk creating "orphaned" infrastructures, where the physical material endures but the digital access required to monitor it is lost.

3.5. Algorithmic Transparency Analysis

The role of Artificial Intelligence in material sorting and mixture optimization was evaluated through an "Algorithmic Transparency Analysis." This methodological step assesses the interpretability of the machine learning models currently deployed in advanced recycling facilities. Using explainability metrics such as SHAP (SHapley Additive exPlanations) and LIME (Local Interpretable Model-agnostic Explanations), the study evaluates the degree to which these "black box" algorithms can be audited by human engineers. The goal is to determine whether the logic driving critical decisions—such as the rejection of aggregate batches—is accessible and verifiable.

In parallel with the technical evaluation, a "responsibility mapping" exercise was conducted to trace accountability paths in the event of failure. This theoretical stress-testing asks: if an AI-optimized concrete mix fails, does liability rest with the algorithm developer, the concrete manufacturer, or the certifying engineer? By analyzing the gap between algorithmic autonomy and legal liability, this section of the methodology highlights the ethical risks associated with deploying opaque automated decision-making systems in safety-critical construction applications.

3.6. Resource Justice Metrics

To address the social dimension of sustainability, a set of "Resource Justice Metrics" was synthesized to evaluate the equity of technological distribution. These metrics are designed to measure barriers to entry, focusing on three key indicators: infrastructure availability (proximity to advanced recycling plants), capital requirements (investment cost relative to local economic output), and expertise accessibility (the availability of trained personnel to manage digital systems). These indicators allow for a spatial and economic analysis of where high-tech recycling is feasible versus where it is exclusionary.

Furthermore, the methodology analyzes the distribution of benefits versus burdens. It investigates whether the environmental gains of high-tech recycling are globally shared or if they are localized to wealthy urban

centers while the environmental costs of electronic waste and energy consumption are externalized. By quantifying these disparities, the resource justice metrics provide a structured way to argue for or against the "universal" applicability of specific recycled concrete technologies, grounding the ethical argument in socioeconomic reality.

3.7. Ethical Evaluation Matrix

The final component of the methodology is the "Ethical Evaluation Matrix," a synthesis tool designed to integrate the diverse data streams collected in the previous steps. This matrix compares three distinct scenarios: Low-Tech (mechanical crushing, no sensors), Mid-Tech (standard processing, basic logging), and High-Tech (AI-sorting, real-time sensing). Each scenario is scored across four critical pillars: Environmental Performance (from LCA), Economic Viability (from LCCA), Data Governance (from the Sensor Audit), and Social Accessibility (from Justice Metrics).

This comparative scoring system moves beyond a binary "good or bad" assessment, allowing for a nuanced visualization of trade-offs. For example, a High-Tech scenario might score highest on environmental performance and structural safety but lowest on data privacy and social accessibility. This matrix serves as the analytical core of the paper's discussion, providing a clear, evidence-based framework to visualize the complex interplay between technological capability and ethical responsibility in the design of the new millennium.

4. RESULTS AND DISCUSSION

4.1. LCA Insights and Ethical Ramifications

The comparative Lifecycle Assessment (LCA) reveals a distinct dichotomy between low-tech and high-tech recycling methodologies. Low-tech scenarios, characterized by mechanical crushing and simple sieving, consistently demonstrate the most immediate environmental benefits. These processes require minimal energy input while effectively diverting waste from landfills, resulting in a substantial net reduction in Global Warming Potential (GWP). In contrast, high-tech interventions—specifically those involving thermal activation or chemical re-processing to produce high-grade aggregates—present a more complex environmental profile. While these advanced methods successfully restore the mechanical properties of the concrete to near-virgin levels, the energy required to generate the necessary heat or chemical reactions significantly spikes the embodied carbon of the final material. In several modeled scenarios, the carbon penalty of thermal treatment nearly negated the savings gained from avoiding virgin aggregate extraction.

This finding challenges the prevailing narrative of "technological optimism" in sustainable design. It suggests that the pursuit of material perfection through high-tech means can inadvertently lead to "burden shifting," where environmental costs are merely moved from the raw material phase to the processing phase. Consequently, an ethical evaluation of Recycled Concrete Aggregate (RCA) cannot rely solely on carbon metrics or compressive strength. It requires a normative judgment that weighs the necessity of high-performance materials against their energy costs. If a simple, low-energy recycled aggregate is sufficient for a road base or non-structural fill, applying energy-intensive high-tech recycling processes becomes an ethically questionable over-specification. True sustainability, therefore, may lie in matching the appropriate level of technology to the specific application, rather than assuming that higher technological complexity equates to superior ecological performance.

4.2. Data Governance Issues

The deployment of sensor-driven monitoring systems within recycled concrete infrastructure has exposed a critical vulnerability in data governance: the asymmetry of information ownership. The results indicate that while sensors provide valuable real-time data on stress, moisture, and durability, the ownership of this data often defaults to the hardware manufacturers or the software service providers via restrictive End-

User License Agreements (EULAs). This creates a scenario of "digital landlordism," where building owners and facility managers possess the physical structure but lack full agency over the digital information it generates. They may be forced to pay subscription fees to access the health records of their own buildings, or worse, be unaware that their data is being aggregated and monetized by third parties for market analysis or product development.

From an ethical standpoint, this disenfranchisement undermines the autonomy of the architectural stakeholder. Responsible innovation demands the establishment of "data sovereignty" as a core principle of smart material systems. Ethical frameworks for the new millennium must insist on transparent data policies that clearly define ownership rights, ensuring that data generated by the built environment remains a public or owner-controlled asset rather than a proprietary commodity. Furthermore, equitable data-sharing agreements are essential to prevent vendor lock-in, allowing engineers to migrate historical structural data between different platforms. Without these protections, the integration of sensors risks transforming the built environment into a surveillance capitalism ecosystem, prioritizing commercial data extraction over the public good of structural safety.

4.3. Algorithmic Accountability

The analysis of AI-driven recycling processes highlights a significant tension between operational efficiency and accountability. Machine learning algorithms used for sorting demolition waste and optimizing concrete mixtures operate with high precision but low interpretability—a phenomenon known as the "black box" problem. When an algorithm decides to accept a specific batch of heterogeneous waste or adjust a mix design, the internal logic driving that decision is frequently opaque to the supervising engineer. This lack of transparency poses a severe ethical risk in the event of material failure. If a structural element composed of AI-optimized recycled concrete fails, assigning liability becomes legally and ethically ambiguous: does the fault lie with the engineer who signed off on the material, the software developer who wrote the code, or the opaque dataset on which the model was trained?

To mitigate these risks, the results argue for the mandatory integration of Explainable AI (XAI) frameworks and "human-in-the-loop" systems. XAI techniques allow the system to output not just a decision, but a rationale (e.g., "Batch A rejected due to high probability of gypsum contamination"), thereby restoring a layer of professional oversight. Ethical accountability requires that automated systems be treated as decision-support tools rather than autonomous agents. By maintaining human oversight in the loop, engineers can validate algorithmic outputs against established safety standards. This approach ensures that the pursuit of optimization does not compromise the fundamental professional duty to safeguard public welfare, ensuring that technological opacity does not become a shield for negligence.

4.4. Accessibility and Justice

Finally, the study illuminates a troubling correlation between technological complexity and social exclusion, framing resource justice as a critical blind spot in current innovation trajectories. The infrastructure required for high-tech recycling, including robotic sorting arms, advanced sensor networks, and AI processing units, requires significant capital investment and specialized technical expertise. These resources are predominantly concentrated in major urban centers and well-funded flagship projects. In contrast, rural areas and smaller-scale construction firms frequently lack the financial capacity and digital literacy to adopt these advanced solutions. This creates a two-tier system in the built environment: an elite tier of high-performance, digitally monitored sustainable architecture, and a peripheral tier reliant on lower-quality, traditional methods.

This disparity mirrors and deepens broader social inequities, risking a future where sustainable construction becomes a luxury good rather than a universal standard. To address this ethical failure, the discussion calls for proactive policies and educational programs designed to democratize access to these

technologies. This includes state-subsidized infrastructure for regional recycling hubs and open-source software platforms that lower the barrier to entry for smaller actors. An ethical approach to material innovation must go beyond purely technical scalability to consider "social scalability," ensuring that the benefits of the circular economy are accessible to the diverse communities that construct and inhabit the built environment.

5. CONCLUSION

The investigation into the technological integration of Recycled Concrete Aggregate (RCA) systems reveals that the pursuit of sustainability in the new millennium is no longer a purely material challenge; it is fundamentally an ethical one. As this study has demonstrated, while digital innovations such as sensor networks and AI-driven optimization offer powerful tools to enhance the performance and reliability of recycled materials, they also introduce profound complexities regarding privacy, accountability, and equity. Therefore, technological innovation in concrete production cannot be evaluated in isolation. It must be subjected to rigorous ethical scrutiny to ensure that the drive for efficiency does not compromise the values of justice and transparency. True circularity requires a holistic framework where the physical stewardship of resources is matched by the responsible stewardship of data and algorithms.

To translate this ethical stance into practice, the industry must adopt a set of core normative principles. First and foremost, transparent data governance frameworks are essential to prevent the monopolization of structural health information. Stakeholders must establish clear protocols that ensure data sovereignty remains with building owners and the public, rather than being enclosed by proprietary vendor ecosystems. Simultaneously, the deployment of automation demands algorithmic explainability and human oversight. As reliance on AI for material sorting and mixture design grows, engineers must retain the ability to audit and interpret these decisions, ensuring that "black box" logic does not obscure professional liability or safety standards in the event of failure.

Finally, the definition of sustainable architecture must be broadened to encompass lifecycle-based ethical evaluations and social equity. This study advocates for policies to promote equitable access, ensuring that high-tech recycling infrastructures are not restricted to elite urban centers but are made accessible to smaller, rural, and developing sectors. By actively mitigating the digital divide, the construction industry can prevent the stratification of the built environment. Ultimately, embedding the principles of transparency, accountability, and justice into the technical workflow fosters responsible architectural progress. It ensures that the recycled concrete technologies of the future do not merely reduce carbon emissions but actively contribute to a more just and resilient society in the digital age.

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TEMPORAL STRUCTURES AS EXPERIMENTS IN FORM AND TECHNIQUE: THE PAVILIONS AS A BRIDGE BETWEEN HERITAGE AND SUSTAINABLE SMART INNOVATION

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ABSTRACT

This paper explores the pavilion as an experimental architectural type, focusing on its role as a bridge between artistic heritage and technological innovation. From the XIX century to the Art Nouveau/Liberty period up to nowadays, the pavilion emerged as a laboratory of forms and techniques. Those buildings were already considered a temporary yet visionary structure where new materials, constructive technologies, and aesthetic ideals were tested. This study starts with a deep analysis of a series of temporary structures designed between XIX and XX centuries where architects transformed craft and ornament into tools of local modern identity, merging expressive language with structural innovation. Building upon this historical framework, the second part of the paper adopts a contemporary perspective rooted in the intersection between architecture and engineering. Pavilions and kiosks are explored as strategic and multifunctional architectural tools, capable of activating underused or fragmented spaces through flexible, modular, and reversible interventions. The research highlights the integration of Design for All approaches as fundamental parameters, together with economic feasibility and ease of construction as key enablers for their widespread adoption. Also, technological principles, i.e., modularity and prefabrication, as core design strategies, allows scalability, rapid assembly, and adaptability to different contexts while maintaining cost control and construction efficiency. Sustainability is addressed through an integrated approach that combines Circular Economy principles with compliance to contemporary environmental policies and regulations. Several passive design strategies are here discussed as primary tools for reducing energy demand and improving environmental performance. Finally, the integration of renewable energy systems is also discussed. By combining historical analysis with performance-oriented and technology-driven design approaches, this paper proposes pavilion architecture as a scalable, replicable, and context-sensitive model for sustainable architecture, capable of translating architectural engineering research into concrete and transferable design solutions.

Keywords: Pavilion; Sustainable architecture; Dry construction systems; Ecological materials; Adaptive reuse, Architectural experimentation.

1. INTRODUCTION

Throughout the XX century, international exhibitions played a pivotal role as moments of encounter, exchange, and dialogue among nations, cultures, and visions for the future. The Paris Universal Exposition of 1867 (fig. 1) (Fournel, 1867). exemplifies the early emergence of such events as platforms for showcasing technological, industrial, and cultural achievements. These exhibitions not only allowed countries to present innovations but also fostered cross-cultural encounters and experimentation in architectural expression (Moschelkov, 2020). Within these large-scale events, pavilions and kiosks assumed a central role, evolving beyond mere exhibition spaces into symbolic architectures that narrated national identity, technological ambitions, and artistic culture. Each pavilion functioned as a national showcase, using forms, materials, and construction solutions as instruments of political and cultural representation (Nikou, 1997) Pavilions thus became laboratories for technical experimentation, testing innovative materials such as iron, glass, and reinforced concrete, and exploring lightweight and modular structures, often temporary in nature (Galanin, 2020).

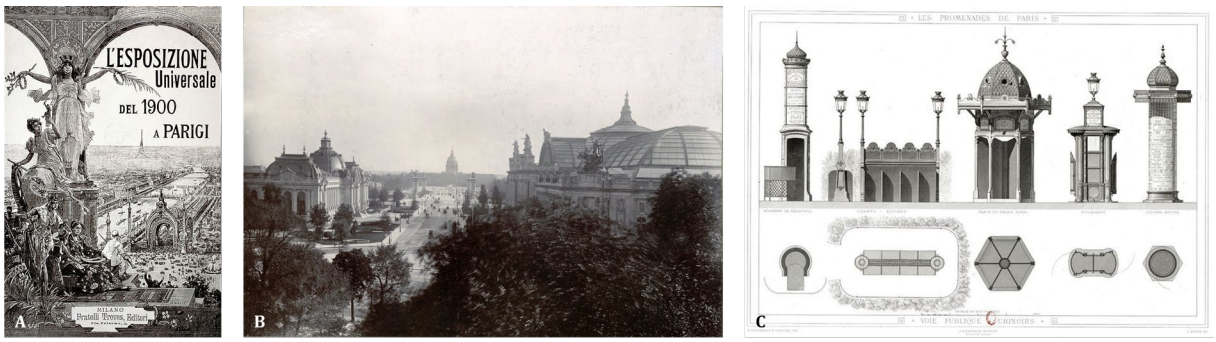

Fig. 1. *A) Manifesto of the Exposition universelle de 1900 (Paris), B) Grand Palais, Petit Palais, Invalides, Anonyme, 1900. C) Kiosks "pour les promenades de Paris". © Provenant de la collection: École Polytechnique.*

New small-scale architectural types, such as the public kiosks, emerged alongside pavilions, reflecting a period of intense social, technological, and artistic transformation. The rapid industrialization and urban expansion demanded constructions that combined functionality with aesthetic experimentation, often realized through refined combinations of wrought iron, glass, local marble, and timber (Grishina, 2024; Gladkov, 2009; Barth, 2008)These minor structures served functional purposes - newspaper stands, ticket offices, refreshment kiosks, or park entrances - while enhancing the legibility and identity of urban spaces, reshaping daily interactions with the city. Pavilions and kiosks also acted as instruments of propaganda and identity assertion. In such a politically and ideologically changes and revolutions, they charged contexts, architecture communicated modernity, power, and cultural narratives. Visitors experienced immersive environments that combined shapes, light, materials, scenography, and innovative technologies, transforming architecture into a medium of education and collective wonder (Kotlyarevskaya, 2020). Across Europe, cities such as Paris, Brussels, Vienna, Barcelona, Palermo, and Lisbon witnessed the flourishing of emblematic examples reflecting Art Nouveau, Modernisme, Jugendstil, Liberty, and Sezessionstil, where craftsmanship, symbolism, and industrial materials coexisted within new aesthetic paradigms (Robey, 2015).

In Italy, domestic exhibitions between 1861 and 1911 - in Florence, Milan, Rome, Turin, and Palermo - offered opportunities for experimentation and adaptation of European trends (Courtenay, 2011).

The National Exposition of Palermo (1891-1892) (Licari, 2013; AA.VV., 1991; Alfano, 1891), for example, saw famous architects of the time, such as Ernesto Basile, integrate kiosks and other small structures that combined functional innovation with Art Nouveau-inspired aesthetic refinement. More particularly, Palermo was the first city in Southern Italy to host the event, which included pavilions inspired by the Arab-

Norman style, an art gallery with more than 700 paintings and 300 sculptures, and an ethnographic exhibition curated by Giuseppe Pitrè, a well-kmown man of letters and ethnologist (Fig. 2.) (Ingria, 1987, Sessa, 2010).

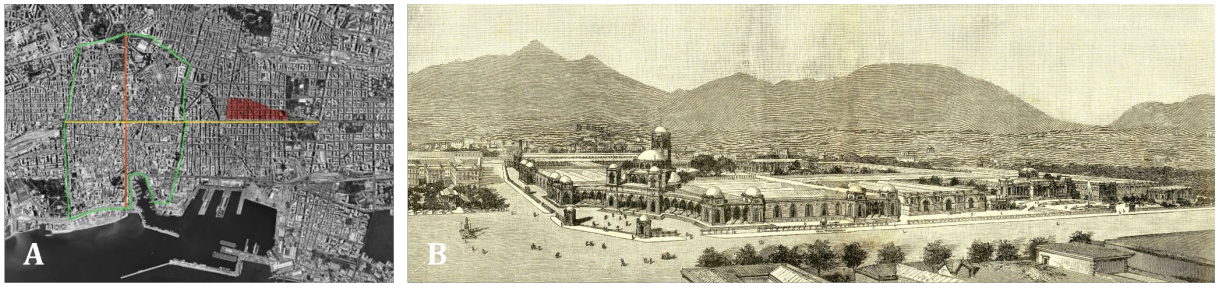

Fig. 2. *A) Location of National Exhibition of Palermo; B) Engraving of the National Exhibition of Palermo.*

Building on that historical framework, this study aims to investigate the potential for contemporary reinterpretation of these temporary architectural types. Specifically, the reinterpretation of an innovative kiosk, designed as a 3D-printed structure, is presented as a case study. This project bridges heritage and modernity by preserving the compositional dialogue with historical examples while integrating sustainable materials and adaptive design principles.

To achieve these objectives, the paper is organized into three sections. The first analyzes European pavilions and kiosks, focusing on types, materials, and urban functions. The second investigates buildings in the city of Palermo as case studies, examining design, historical significance, materiality, and current conditions. The third section synthesizes findings, identifying recurring principles, typological divergences, and strategies for contemporary reuse and urban integration. This structure enables both a historical reconstruction and a forward-looking framework, emphasizing the balance between heritage conservation and innovative design solutions.

2. MATERIALS AND METHODS

This study employs a mixed-methodological approach specifically designed to investigate the type, diffusion, materiality, and identity value of pavilions and kiosks, with a particular focus on the urban and historical context of Palermo. The methodology is structured around three interrelated components: i) the criteria guiding the selection of case studies, ii) the sources and analytical tools utilized, and iii) a comparative-typological framework. Such framework allows for the seamless integration of historical research with contemporary strategies for adaptive reuse and sustainable urban regeneration, positioning minor architectural types as model for innovation. Case studies were chosen based on their architectural and technological features, material selection, and urban function. Types refer to the spatial and structural configuration of pavilions and kiosks, assessing their modularity, lightness, transparency, and urban integration. Material analysis considers both traditional elements, such as wrought iron, glass, marble, and timber, as well as contemporary innovations, including composite and bio-based materials, thereby highlighting continuities and exploring opportunities for sustainable modernization. Urban function encompasses uses such as news-stands, ticket offices, refreshment kiosks, and exhibition pavilions, with particular attention to their capacity to enhance public space, reinforce urban identity, and support multifunctional activities within contemporary urban design. The investigation draws upon diverse historical and contemporary sources. Archival materials, including photographs, site plans, technical drawings, and period documentation, provide the basis for reconstructing the origin and evolution of the structures. Comparative sources, comprising scholarly literature, specialized publications, and international exhibition catalogs, situate the case studies within European and global frameworks.

Architectural analysis is conducted through photographic surveys, descriptive data sheets, and typological diagrams, while urban analysis integrates field observation, mapping of public functions, and evaluation of the visual and symbolic impact of the structures within the cityscape. The methodological framework combines typological, comparative, historical, and urban analyses to provide a multidimensional understanding of pavilions and kiosks. Typological analysis classifies the structures by form, materials, and spatial configuration, revealing shared traits and local variations. Comparative analysis contrasts international and local examples, identifying continuities and divergences in materials, function, and ornamentation. Historical analysis reconstructs the temporal dimension of types diffusion, linking pavilions and kiosks to the artistic and cultural movements of Art Nouveau, Liberty, and Sezessionstil (Dell'Acqua et al., 2009). Urban analysis examines the interaction between the structures and public space, considering visual, symbolic, and functional effects, with particular attention to the Palermo kioks. By integrating these analytical layers, the designed methodology provides a robust framework for interpreting pavilions and kiosks not merely as historical artifacts but as adaptable models for contemporary reuse, resilient urban design, and sustainable regeneration (Foster, 2020). This approach directly informs the subsequent section, in which the outcomes of the analysis are presented through selected international and Palermo case studies, highlighting typological, material, and functional continuities alongside innovative adaptations. In doing so, this research demonstrates how historical buildings, with reference to "minor architecture", can actively contribute to contemporary design challenges, bridging heritage and architectural innovation.

3. ANALYSIS OF CASE STUDIES

Following the mixed-method approach described above, this section applies typological, comparative, and urban analyses to selected international and Italian case studies, tracing the evolution of pavilions from antiquity to modern times. The pavilion, as an autonomous and symbolic architectural structure, has deep roots in ancient civilizations, where small covered spaces served as meeting points or *loci* of power and sacred representation. In Mesopotamia and Ancient Egypt (c. 2500 BC), lightweight structures were employed for religious ceremonies and collective rituals, with columns modeled as lotus or papyrus conveying the connection between architecture and nature, beyond translating cosmic order and divine authority into built form. Similarly, in China, early hexagonal pavilions, known as *ting*, were designed for observation and meditation, embodying Taoist principles of balance and landscape integration. These early examples demonstrate a persistent theme throughout pavilion history: the integration of practical function, aesthetic value, and symbolic meaning. During classical antiquity, pavilions evolved into more defined architectural spaces. Exedras and pergolas functioned as social and conversational areas within thermal complexes and private gardens, while the Canopus of Villa Adriana (Pensabene et al., 2012), exemplifies a spatial environment bridging nature and architecture, enriched by harmonic proportions, water features, and sculptural elements. Persian kushk gardens of the Achaemenid era further reflect a careful integration of humans and landscape, employing water channels and shaded zones as early forms of environmental control. In the Renaissance, European pavilions became instruments of study, contemplation, and leisure, integrating gardens, decorative apparatuses, and hydraulic devices, as seen in Italian villas such as those of the Medici or Villa d'Este (MacGilvray , 1993). Northern European examples, including Sanssouci Palace in Germany, combined elegance and functionality, introducing greenhouse-pavilions that blended outdoor leisure with botanical experimentation (Newton, 1971). With the urbanization of the nineteenth century, pavilions shifted from elite private spaces to civic structures, responding to new social needs. In England, designers such as Joseph Paxton (Fig. 3) pioneered the use of iron and glass in park pavilions, anticipating modular and prefabricated solutions that hosted music, education, and public gatherings, reflecting Victorian urban sensibilities (Auerbach, 1999).

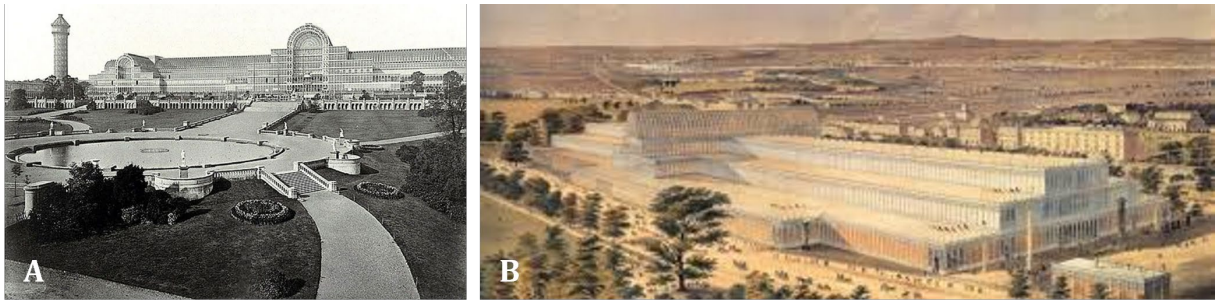

Fig. 3. *A) Crystal Palace, Joseph Paxton; B) World Expo 1851 London. (Source: Dickinson).*

Concurrently, Chinese and Japanese pavilion traditions (Fig. 4), such as *ting* and *chashitsu*, emphasized craftsmanship, asymmetrical symmetry, and landscape integration, influencing modern Western architects including Frank Lloyd Wright and Alvar Aalto. Traditional Chinese pavilions are distinguished by their unique combination of materials, structural forms, and architectural detailing. They are commonly built using wood, stone, brick, bamboo, grass, and copper, with wood being the predominant material in ancient constructions. The material choice strongly influences both the structural system and the visual effect of the pavilion. Pavilions exhibit a variety of geometric shapes, including triangles, rectangles, pentagons, hexagons, and octagons, and their roofs may be single-eave or double-eave, with domes taking round, rectangular, or triangular forms. Structural support is typically provided by one or two sets of pillars, depending on the scale and design. These architectural elements, combined with decorative patterns and careful attention to proportion and form, reflect the integration of functionality, aesthetics, and symbolic meaning in traditional Chinese architecture, often creating a harmonious relationship with their surrounding landscape. Across centuries, pavilions consistently operated as spaces of refuge, representation and social interaction, evolving into a flexible and sustainable architectural device that bridges historical forms with contemporary urban needs.

Fig. 4. *A) Chinese Pavilion ©Newhanfu, 2025; B) Japanese Pavilion ©Anshin-sad, 2025*

3.1 Kiosks in Europe

In France, Hector Guimard's Paris Metro entrances (Fig. 5) (1899–1904) exemplify Art Nouveau applied to urban infrastructure, with wrought iron and glass forms inspired by organic motifs (Graham, 1970). Parisians are nostalgic for these "dragonfly" stations, as they were nicknamed by locals when built in the early 1900s. The green, flowing forms were a triumph of designer Hector Guimard's aesthetic, with the largest station located at Bastille. Guimard designed 141 stations in just over a decade, many featuring ornate glass canopies, such as Abbesses, Montmartre, Étoile near the Arc de Triomphe, and Bastille.

Nowadays, Guimard's stations are considered national treasures, with a replica at MoMA in New York. Sadly, several stations, including Bastille, were demolished in the 1960s during metro modernization.

In Belgium, architects such as Victor Horta, Henry van de Velde, and Paul Hankar translated the ephemeral spirit of exhibition pavilions into permanent urban architecture. Their designs, although often residential, incorporated lightness, transparency, and expressive use of metal and glass, transforming houses and public kiosks into enduring manifestations of innovation and craftsmanship (Collette et al., 2010).

Fig. 5. *A-B-C Paris Métro entrances, Art Nouveau style.*

Similarly, Vienna's Sezessionstil, with architects such as Otto Wagner and Joseph Maria Olbrich, emphasized geometric clarity, linearity, and harmonious integration of ornamentation within functional structures. The Karlsplatz Metro pavilions (Fig. 6) and the Secession Building illustrate both aesthetic refinement and the exploration of modular construction (Paden, 2010).

In Germany, the Jugendstil movement applied similar principles to urban kiosks and public structures, prioritizing structural clarity and the expressive use of industrial materials while retaining refined decorative details (Hoffmann, 2006). Across these contexts, minor architectural typologies functioned not only as utilitarian structures but also as urban markers, enhancing the visual identity of public space and reflecting the interplay between craftsmanship, industrial innovation, and early modern aesthetic experimentation.

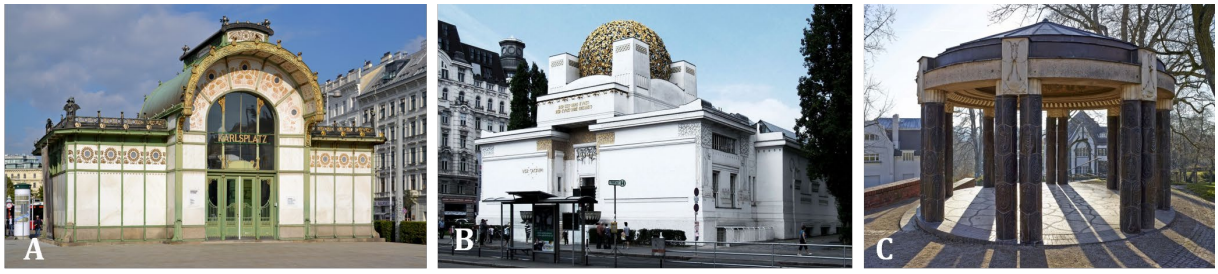

Fig. 6. *A) Otto Wagner Pavillon Karlsplatz; B) Pavilion Seession; C) Keramic Pavilion (Swan Temple), designed by Albin Müller in 1914, located in Mathildenhöhe, Darmstadt.*

In Spain, the Catalan Modernisme developed by architects as L. Domènech y Montaner, A. Gaudí, and J. Puig y Cadafalch combined craftsmanship, symbolism, and structural innovation, with expressive use of wrought iron, ceramics, stained glass, and sculpted stone. Public structures including kiosks, exhibition pavilions,

and newsstands mirrored the aesthetic richness of residential and religious architecture. Notable examples include the pavilions of the 1888 and 1929 Barcelona International Exhibitions, which balanced functional requirements with artistic ambition, maintaining continuity with broader European Liberty styles while asserting a strong regional identity rooted in Catalan craftsmanship (Remesar, 2015).

In the United Kingdom, bandstands, park shelters, and kiosks from late 19th to early 20th centuries represent a more restrained interpretation of Art Nouveau, characterized using cast and wrought iron combined with glass and timber. The aesthetic tended toward geometric discipline and subtle floral ornamentation rather than the exuberant curves typical of Continental Europe, reflecting the British Arts and Crafts ethos that valued craftsmanship and simplicity of form. Notable examples include park bandstands in London, Brighton, and Glasgow, which balanced decorative detail with structural efficiency. Elsewhere in Europe, similar trends were visible in public and exhibition architecture: Czech architect Josef Fanta designed Art Nouveau pavilions for industrial exhibitions in Prague, distinguished by their dynamic iron structures and sinuous decorative reliefs. In Riga (Latvia) (Fig. 7), one of the richest Art Nouveau cities in Northern Europe, kiosks and urban furnishings integrated the same ornamental vocabulary as residential façades, with stylized floral metalwork and colored glass panels enhancing the urban.

Fig. 7. *A) LETA kiosk in Rigas' central station, 1934, B) Kiosk by Reinhold Schmaeling in Āgenskalns., C) ETA kiosk at Zasulauka railway station*

Having examined the typological and material evolution of pavilions across Europe, from Art Nouveau to Jugendstil and Modernisme, it is possible to contextualize local interpretations. The subsequent focus on Palermo allows a closer look at how Italian Liberty architecture adapted these international principles within a specific urban and cultural context.

3.2 Italian cases: the 1891 National Exhibition in Palermo

The National Exhibition of Palermo, dedicated to industry, commerce, agriculture, and the Fine Arts, took place between November 1891 and June 1892. The project was commissioned in 1888 to the young architect Ernesto Basile, who collaborated with engineers Ernesto Armò, Lodovico Biondi, and Alfredo Raimondi. The exhibition occupied a large undeveloped area along the western side of Liberty boulevard (Viale della Libertà), the main axis of urban expansion beyond the city walls, constructed between late 19th and early 20th centuries as an extension of Maqueda Road, East_West axis of the historical centre. The site of the exhibition covered the entire "Firriato" area in property of the Pronces of Villafranca, bounded to the north by the Croci Plan, today Crispi Square, and to the south by Castelnuovo Square, with an overall linear extension of approximately 600 meters (Fig. 8). A diagonal railway line crossed the area and was used to transport construction materials, facilitating the rapid completion of the pavilions in less than eight months. The pavilions, designed as temporary structures, were intended to be removed after the exhibition to allow the development of residential buildings. Most of the palaces built at that time were later replaced in the 20th century by multi-story buildings. Unlike other European exhibitions, no physical traces of the Palermo complex have survived; the memory of the event relies entirely on documentary sources and on some architectural models displayed in the Fine Arts Pavilion.

The kiosks of Palermo, particularly those designed by Ernesto Basile, represent a significant expression of the Italian Liberty style and its integration into the urban fabric. These small yet architecturally sophisticated structures were originally conceived as refreshment points and sales outlets, yet they hold strong symbolic and functional roles within the cityscape. Typically elevated on high stone plinths, as seen in the Ribaudo kiosk and Vicari kiosk, their structural systems combine robust metallic frameworks with wooden cladding, while decorative elements such as wrought-iron details, polychrome mosaics, and intricate cornices articulate both façade and rooflines (Fig. 8A-C). Roof forms often feature prominent pavilion shapes, sometimes punctuated by octagonal lanterns or projecting eaves inspired by foreign stylistic references, providing both visual distinction and practical shelter. The kiosks modular and lightweight construction allows visual transparency and accessibility, enabling them to function as nodes of social interaction and urban orientation. Basile designs demonstrate a careful balance between material innovation and aesthetic refinement: metal elements such as L-shaped or double-T beams, bolts, and technical joints ensure structural integrity, while ornamentation emphasizes elegance without compromising functionality. Over time, some kiosks have suffered neglect, highlighting the importance of systematic conservation and heritage management. Yet, even in their current state, they continue to exemplify Palermo rich Art Nouveau legacy, contributing to the city identity as a space where architectural creativity and urban life intersect.

While these historical structures embody the rich formal and material language of Italian Liberty, post-1950 Neo-Liberty examples demonstrate the enduring influence of these principles on urban architecture. This continuity underscores the adaptability of pavilion typologies over time, allowing modern reinterpretations to incorporate contemporary materials and sustainable construction methods without compromising heritage values. Neo-Liberty developments in urban kiosks reveal persistent typological and formal continuities, including attention to artisanal detailing, structural lightness, and modularity, while adapting to evolving functional and spatial requirements. Comparative examples such as the Giammona kiosk in Catania, the kiosk in Canossa Square in Mantua, and the Mirandola kiosk in Modena illustrate how local interpretations of Liberty aesthetics maintained a dialogue with historical precedents, preserving the characteristic use of metal frameworks, wooden cladding, and decorative motifs that define the Italian Liberty kiosk tradition (Fig. 8D-F).

Fig. 8. *A) Ribaudo kiosk in Politeama square; B) Ribaudo kiosk in Verdi square; C) Vicari kiosks in Verdi square; D) Giammona kiosk in Catania; E) Canossa Square kiosk in Mantua; F) Mirandola kiosk in Modena.*

3.3 Common Principles and Typological-Material Differences

Comparative analysis across Europe and Italy highlights common principles of pavilion architecture, including structural lightness, modularity, transparency, and integration into urban space. Decorative approaches, however, vary. Indeed, floral motifs predominate in France, Belgium, and Italy; geometric forms dominate in Austria and Germany; the Catalan Modernisme emphasizes polychrome ceramics and organic shapes. Public function consistently unites international and local examples, serving as urban furniture and social infrastructure. The Ribaudo kiosk in Palermo exemplifies a balance between decorative Liberty elements and functional urban performance, bridging European tradition with local reinterpretation and illustrating how minor architectures mediate between heritage, innovation, and civic identity. Key examples discussed in this analysis include Hector Guimard Paris Metro entrances, Victor Horta urban kiosks in Brussels, Otto Wagner Karlsplatz Metro pavilions in Vienna, Joseph Maria Olbrich Secession Building, Domènech y Montaner and Gaudí kiosks and pavilions in Barcelona, Josef Fanta industrial exhibition pavilions in Prague, the Ribaudo kiosk in Palermo, and bandstands in the United Kingdom public parks.

4 FRAMEWORKS FOR CONTEMPORARY KIOSK DESIGN: REINTERPRETING SHAPES IN GREEN APPROACH

Building upon the historical and typological analyses developed in the previous sections, it is now possible to position the discussion within a broader and more operational theoretical framework focused on architectural design, urban regeneration, and technological and executive strategies. The examination of pavilions, kiosks, and lightweight structures has provided a comprehensive overview of their evolution, construction techniques, experimental character, and the social, cultural, and functional motivations that have driven their realisation across different scales, periods, countries. This background highlights the pavilion not merely as an architectural object, but as a huge testing ground for innovation, capable of anticipating broader transformations in design approaches, construction processes, and material experimentation. Within the contemporary architectural debate, design is increasingly understood as an integrative process in which spatial configuration, technological systems, environmental performance, social inclusion, and economic feasibility are intrinsically interconnected. In this perspective, the analysed pavilion type represents a privileged field of experimentation, where architectural intent, construction logic, and sustainability-oriented innovation could converge in a controlled, adaptable, and measurable manner. The small scale of these structures allows for the direct translation of theoretical principles into concrete design solutions, making them particularly suitable for applied research & innovation along with demonstrative interventions.

From the standpoint of urban regeneration, recent theories emphasize the strategic role of temporary, lightweight, and reversible architectural interventions in the requalification of underused, residual, or fragmented urban spaces. In fact, such architectural interventions enable rapid activation, functional testing, and incremental transformation while limiting irreversible impacts on the built environment. In this context, pavilions, kiosks, and temporary structures operate as infrastructural and social devices rather than isolated objects, supporting community-oriented activities, cultural programs, and collective uses. Their effectiveness is closely linked to their capacity to adapt to changing urban conditions and to respond to diverse and evolving local community needs. Architectural design is therefore increasingly aligned with the principles of Design for All (European Agency for Special Needs and Inclusive Education, 2025) and inclusive design, which promote built environments that can be accessed, understood, and used by the widest possible range of people, regardless of age, ability, or social condition. When such theories are applied to pavilion architecture, these principles influence the spatial organization, circulation systems, material choices, and technological solutions, ensuring accessibility, spatial clarity, sensory comfort, and functional flexibility. Inclusivity thus becomes a core design parameter, integrated into both the architectural concept and the technological and executive development of the project. At the same time, the mere architectural design progressively overlaps with technological and executive design, aimed at the engineerisation of the project making it strictly adaptable and acceptable by local communities. Performance-oriented approaches highlight the necessity of integrating structural systems, envelope design, building physics, and construction techniques from the earliest design stages. Architetural Engineering is not conceived as a secondary or purely technical layer, but as a generative component of the architectural concept, informing modularity, spatial flexibility, and construction logic. This integration is essential to ensure energy efficiency, construction feasibility, durability, and ease of assembly and disassembly.

Within this framework, prefabrication and industrialized construction systems assume a central role. The use of modular and standardized components enables precision in the executive phase, reduction of construction time and costs, and improved quality control. Prefabrication also facilitates dry assembly techniques and reversible construction strategies, which are particularly relevant for temporary or semi-temporary interventions. These characteristics support adaptability, scalability, and reuse, reinforcing the role of pavilion structures as flexible tools for urban regeneration rather than fixed and permanent solutions. A key dimension of this approach is represented by the principles of the Circular Economy

(European Parliament, 2023), which increasingly inform contemporary architectural and technological design. In this perspective, buildings are conceived as material reservoirs, and construction systems are designed to accommodate reuse, recycling, and the integration of secondary raw materials with enormous benefits to the environment, society, and economy in general. The incorporation of waste and by-products of different origin (i.e. industrial residues, construction and demolition waste, agri-food residues, or bio-based by-products of various nature) into novel materials, components, and systems offers significant potential to improve environmental performance while maintaining or improve technical and functional qualities. Pavilion architecture, due to its controlled scale and experimental nature, provides an ideal context for testing and validating such material strategies, as it was done in the past. These principles are closely aligned with current regulatory and policy frameworks, including the Minimum Environmental Criteria (MEC) (Italian Government, 2025), which promote life-cycle-based design, recycled content, and low-impact materials in construction. At the European level, the Renovation Wave (European Commission, 2025a) as a framework program of the larger Green Deal (European Commission, 2025b) highlights the need for systemic, scalable solutions to improve energy performance and reduce emissions in the built environment. Similarly, the objectives of the United Nations 2030 Agenda (United Nations, 2015), with particular reference to Goal 9 – Industry, innovation and infrastructure, Goal 11 - Sustainable cities and communities, Goal 12 - Responsible consumption and production, and Goal 13 - Climate action, provide an international reference for integrating environmental, social, and economic dimensions within architectural design processes. The New European Bauhaus (European Union, 2025) initiative further reinforces this integrated vision by advocating a synthesis of sustainability, aesthetics, and inclusion as shared design values.

4.1 Technological strategies for a contemporary framework design

Within the aforementioned theoretical and methodological frameworks, small pavilions, kiosks, and temporary structures can be conceived as inherently multifunctional systems enabled by a modular design approach. Modularity allows architectural systems to be configured, expanded, or reduced according to specific functional requirements, spatial constraints, and performance targets. Through the aggregation and recombination of standardized modules, a single system can support multiple uses over time, i.e. cultural installations, community services, information points, or temporary commercial activities, responding to different phases of an urban regeneration process. Scalability ensures proportionality, efficiency, and contextual responsiveness, while allowing performance levels to be calibrated according to the intended use and duration of the architectural intervention. The effectiveness of these systems is further enhanced by their adaptability to local conditions. While prefabrication and industrialized construction provide a global technological foundation, the specificity of place remains a fundamental determinant in architectural decision-making. Local climatic conditions, urban morphology, social and economic dynamics, regulatory frameworks, and material availability deeply influence design choices related to form, spatial organization, construction techniques, and material selection. Standardized systems thus enable differentiated outcomes, allowing localized adaptations without compromising overall coherence and efficiency.

A decisive factor supporting the experimentation and diffusion of these architectures is their inherent economic affordability combined with ease of construction. In fact, reduced construction costs, simplified building processes, and short realisation times are strategic enablers for this kind of initiatives, particularly in contexts characterised by limited financial resources or the need for rapid implementation and urban regeneration. Economic efficiency is therefore understood not as a constraint, but as an active design driver that could determine architectural, technological, and organizational choices. The limited scale of pavilion structures, together with modular and prefabricated systems, allow to accurately control costs, effectively predict timelines, and deeply reduce on-site complexity. Indeed, off-site production minimises construction risks and waste, while dry assembly techniques facilitate rapid deployment, reversibility, and phased implementation. These characteristics support incremental development strategies, allowing the activation

of spaces with minimal initial investment and progressively expanded or upgraded over time. Moreover, affordability and construction simplicity lower technical and financial barriers, allowing a wider range of actors, including public administrations, local communities, and non-profit organizations, to participate in regeneration processes, thereby reinforcing social inclusion and spatial equity.

Within this integrated framework, passive efficiency systems assume a central role as design strategies aimed at reducing energy demand and environmental impact while ensuring high levels of comfort and architectural quality. Passive design approaches prioritise the optimization of form, orientation, spatial organization, and envelope performance in relation to local climatic conditions, allowing sustainability objectives to be achieved through architectural intelligence rather than through an exclusive reliance on mechanical and active systems. Natural ventilation represents one of the most effective passive strategies, particularly for small-scale, lightweight, and temporary structures. The careful positioning and sizing of openings, the design of cross-ventilation paths, and the exploitation of stack-effect mechanisms enable effective air exchange and thermal comfort with minimal energy consumption. These solutions are fully consistent with the European energy efficiency principles and with regulatory frameworks that promote demand-side reduction as a priority strategy. In this respect, passive ventilation contributes to compliance with energy performance requirements established by the Energy Performance of Buildings Directive (EPBD) (Olasolo-Alonso et al., 2023) and its subsequent updates, which emphasize the reduction of primary energy consumption and the optimization of building performance through design measures. Passive cooling strategies further support energy efficiency, especially during warm seasons, by limiting overheating and reducing the need for mechanical cooling systems. Shading devices, brise-soleil, ventilated façades, double-skin elements, and the calibrated use of thermal mass are effective tools for controlling solar gains. These strategies align with the objectives of Nearly Zero Energy Buildings (NZEB) standards (European Commission, 2025c), which promote the minimisation of energy demand through envelope optimization and passive climate control before the integration of renewable energy systems. In pavilion architecture, such solutions can be integrated within modular and prefabricated components, ensuring both performance and ease of assembly. Daylighting strategies could constitute another fundamental aspect of passive efficiency. The orientation of the building, the directional design of façades, and the proportion and placement of transparent and translucent elements let an optimal use of natural light, reducing reliance on artificial lighting while improving visual comfort and spatial perception. These principles are consistent with European and national regulations that encourage daylight optimization as part of overall energy performance calculations, which explicitly promote the use of passive strategies to reduce energy consumption and enhance indoor environmental quality in public buildings. The integration of passive design systems is particularly relevant in the context of temporary and modular architectures, as it supports compliance with regulatory requirements while maintaining simplicity, affordability, and reversibility. Passive strategies contribute to meeting energy performance targets without increasing technological complexity or operational costs, reinforcing the feasibility of small-scale interventions within broader urban regeneration processes. Moreover, their compatibility with prefabrication and industrialized construction systems ensures that environmental performance can be embedded directly into standardized components, improving quality control and replicability.

Within the broader framework of energy efficiency and sustainable design, the integration of renewable energy systems also represents a further and essential step in improving the environmental performance of kiosk architectures. In line with the principles promoted by European energy policies, renewable energy technologies are not conceived as add-on systems, but as integral components of the architectural and technological design process. Among renewable energy solutions, photovoltaic systems play a particularly strategic role due to their versatility, scalability, and compatibility with modular and prefabricated construction systems. In small-scale and temporary architectures, photovoltaic technologies enable on-site energy production, contributing to the reduction of primary energy demand and, in some cases, supporting partial or full energy autonomy. This aspect is especially relevant in regeneration contexts characterized by limited infrastructure or in experimental installations aimed at testing innovative energy solutions.

Building-integrated photovoltaic (BIPV) systems (Belloni et al., 2024) offer significant opportunities for architectural integration, allowing energy-generating elements to simultaneously perform envelope, shading, or finishing functions. Innovative solutions such as photovoltaic glass, semi-transparent PV panels, and photovoltaic roof tiles enable the integration of renewable energy production within façades, roofs, and skylights without compromising architectural quality. These technologies allow the envelope to become an active system, capable of contributing to energy performance while maintaining visual continuity, material coherence, and design flexibility. In pavilion architecture, BIPV solutions are particularly effective when combined with modular design strategies. Photovoltaic components can be also incorporated into standardized façade or roof modules, facilitating off-site production, quality control, and rapid on-site installation. The scalability of photovoltaic systems allows energy production capacity to be calibrated according to the size, function, and duration of the intervention, supporting performance-based design approaches consistent with NZEB principles and with the requirements of the EPBD. Innovative photovoltaic solutions also contribute to sustainability objectives beyond energy production. The use of lightweight, recyclable, and low-impact PV components aligns with circular economy principles and supports life-cycle-based design strategies. Moreover, the integration of photovoltaic systems within prefabricated elements reduces material redundancy and simplifies maintenance and disassembly, reinforcing the reversibility and adaptability of temporary structures.

Finally, from a regulatory and policy perspective, the integration of passive efficiency strategies and renewable energy systems is fully aligned with the objectives of the above mentioned European and international framworks which prioritise the adoption of integrated technological solutions combining energy demand reduction, with dedicated on-site renewable energy provisions, climate resilience, and the improvement of building performance across all scales of intervention.

5. CONCLUSION

This study has centered on the possible design of a contemporary circular and sustainable kiosk as a pivotal case study, elevating it to a paradigm of contemporary reinterpretation within the domain of minor urban architecture. Through detailed analysis, essential design principles have been identified - structural lightness, modularity, transparency, harmonious integration into the public realm, and the considered use of materials. While firmly rooted in the aesthetic and formal language of Liberty and Art Nouveau, these principles acquire renewed relevance through contemporary technological innovations and environmentally conscious materials. Historical pavilions and kiosks, examined as comparative references, provide a layered understanding of the forms, aesthetic languages, and constructive experiments that shaped Europe between the late XIX and early XX centuries, situating the research within a broader cultural, urban, and symbolic framework. The study demonstrates that pavilions and kiosks transcend their original utilitarian or decorative functions. Far from being mere ornamental objects or service points, they act as urban devices that define identity, guide public spatial experience, and embody collective memory. Comparative analysis of international historical examples, the Ribaudo Kiosk, and the Pirrone Kiosk reveals clear design guidelines: careful attention to artisanal detail, proportional harmony, visual transparency, and constructive modularity constitute a body of typological knowledge transferable to contemporary urban contexts. In this way, pavilions function as a bridge between tradition and the evolving demands of modern society. Within this framework, pavilions and kiosks serve as mediators between past and future. They recall the aspirations and achievements of previous eras while providing adaptable frameworks for reuse, innovation, and experimentation. Their typological flexibility allows them to accommodate cultural activities, social interactions, information hubs, or urban services without compromising their intrinsic identity or symbolic value. The contemporary reinterpretation here exemplified as a general technolocical design framework ensures continuity of typological and poetic characteristics from historical models, while introducing sustainable materials, modular construction systems, and advanced technological solutions that address contemporary urban challenges, including environmental sustainability, social inclusivity, and

heritage valorization. The research affirms that minor architecture is not merely a testament to historical aesthetics or cultural legacy; it operates as a dynamic urban laboratory capable of inspiring new design strategies. Analysed kiosks work as an interpretative key, a conceptual and material bridge connecting artistic, technological, and social achievements of the past with the imperatives of innovation, sustainability, and quality in contemporary public spaces. This continuity transcends typological or formal issues, positioning pavilions as a mechanism to integrate memory, identity, and experimentation. It points toward a future in which the past is not only preserved but actively mobilized as a generative resource, guiding the creation of resilient, culturally resonant, and experientially rich contemporary cities.

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EDGE OF INVISIBLE: GEOMETRY AND METAPHENOMENOLOGY OF SPACE

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ABSTRACT

When artist Rachel Whiteread created a "positive from a negative" in her cast of *Room 101* from George Orwell's *1984*, she made physical an interior void — rendering visible the invisible. In so doing, she demonstrated that whether or not one can see or touch it, space inevitably shapes us. The purpose of this paper is to move beyond object and subject alike, toward those aspects of architecture that, though unseen, are preconditioned in the mind.

Within this framework, metaphenomenology — a philosophy of architecture that investigates the transcendental conditions through which space and time become manifest to consciousness — reveals geometry as one of its essential components. Geometry, in this sense, is neither an abstract system nor a decorative device, but a metaphysical interface: the convergence of spatial surface and human perception, shaping how we inhabit the world prior to cognition. Appropriated by architects as neither vessel nor void, geometry thus poses a paradox concerning the imperceptibility of interior space itself.

Drawing from Laugier's concept of empirical beauty explicated in *Essay on Architecture*, and Kant's concept of Transcendental Synthesis, who reminds us that our experience of being is always spatial, this paper argues that the interior is a space with an edge — an invisible yet intelligible threshold between inside and outside — charged with geometric signifiers that transcend culture. Embodied in the work of Rachel Whiteread, which is both sculpture and architecture, the built edifice becomes less a container of meaning than a catalyst for it: a vessel through which the architect's desire to evoke solemnity is fulfilled only through an *a priori* participation of the subject. Whereas architectural experience is rooted in sense perception and phenomena, metaphenomenology presents an unexpected convergence between ancient architectural theory and a Kantian transcendentalism.

KEYWORDS: Metaphenomenology, Spatial intuition, Geometry, Transcendental Idealism, *a priori* structure, Architectural experience, Aesthetic experience, Spatial perception, Epistemological framework, Cartesian space, Conceptual scaffolding, Inversion of space, Space and time

1. SPACE, EXPERIENCE, AND THE OBJECT: RACHEL WHITEREAD

On the 28th of October 1993, the *East London Advertiser* published an article covering Rachel Whiteread's concrete cast of a Victorian house. In the article a local designer, Dick Stringer, claimed *"I think it's brilliant! I like the inside-outside quality. It's a new way of seeing traditional things."* (Kloster, 1993 pp.24) Cast in concrete from the volumetric space inside a house nearing demolition, Whiteread takes the interior of the building, which is unable to be seen, and converts it into a visible object. A temporary exhibition, *House* questions the relationship between space and sense-perception (Figure 1).

If *House* illustrates undefinable space and its meaning, her similar cast of George Orwell's *Room 101* conflates the space inside with hapticity. Whiteread cast a mechanical room in the basement of the BBC headquarters where Orwell worked, also numbered 101, which is reputed to be his inspiration for the chamber featured in *1984*. The intuition of touch, torture, and pain reifies the space inside with the space of the mind through fear that you *"dare not give a name to."* (Claypole, 2003) To experience a Whiteread cast is to perceive the invisible. House or torture chamber we understand the otherwise imperceptible.

It is precisely this vacuous imperceptibly that allows space to reside both in the subject and the object - in the participant and the architecture — transcending mere phenomenological experience. Less about geometrical architecture than it is about the interiority of geometry through architecture, this paper aims to interogate the interstitial nature of space itself. Based on textual and architectural evidence we argue that Rachel Whiteread's casts are following ancient and historical notions of space in her projects that blur the boundary between art, philosophy, and architecture. Through a reversal of the figure-ground relationship, the paper will provide a framework for answering larger philosophical questions: What role does the object play in spatial experience, and more specifically what is the relationship between the building and its enclosed interior space? How does one experience sensory perception of space when it is unable to be perceived? How is geometry ascribed within us?

Figure 1. Concrete cast of Victorian home

Rachel Whiteread, 'House', 1993

2. AN UNNATURAL HUT

Marc-Antoine Laugier's *Essay on Architecture* is a polemical search for the fundamental and pure characteristics of the art of building, stripped of fashion and caprice. (Laugier, 1977) He argues that architectural value does not arise from ornament or custom but from simple, intelligible relations that our eyes and judgment can grasp at once. To locate those relations he reads the classical orders not as a catalog of styles but as rational instruments that encode proportion, support, and legibility. Against the authority of precedent alone, he measures buildings by principles that can be reasoned about and tested in experience. The essay's most enduring emblem is the "primitive hut," a heuristic figure that reduces architecture to mimicry of nature in order to reveal what is essential to shelter and to beauty.

"The Abbe Laugier reinterpreted Cordemoy to posit a universal 'natural' architecture, the primordial primitive hut consisting of four tree trunks supporting a rustic pitched roof. After Cordemoy, he asserted this primal form as the basis for a sort of classicized Gothic structure in which there would be neither arches nor pilasters, nor pedestals, nor any kind of articulation, and where the interstices between columns would be as fully glazed as possible." (Frampton, 2004 pp.14)

Laugier's primitive hut is not merely a rustic cabin, it is pared down architecture stripped of artifice, revealing elemental relationships emblematic of the early enlightenment, such as those systematized by John Locke and Géraud de Cordemoy. Laugier's project is a search for first principles — an epistemological architecture standing independent from ornament and contamination. The result is both a critique of prevailing practice and a normative theory: architecture should be governed by universal principles of proportion and clarity through which space becomes legible and meaningfully felt.

Laugier proposes a beginning grounded in sensory experience of objects rather than meta-physical authority. As such, Laugier's architectural construct aligns with Locke's epistemology outlined in *An Essay Concerning Human Understanding*, in which he dismantles notions of innate knowledge. (Locke, 1996) Laugier insists that experience is the only origin of ideas. For Locke the mind is a *tabula rasa* formed *post-de-facto* through sensory impressions and subsequent reflections. Both thinkers resist inherited dogma, whether architectural excess or scholastic tradition, toward an empirical rationalism: a view that truth is constructed from beginnings, or prime contact with the world.

This enlightenment rationalism liberated architecture from dogma and redefined it as a constructed knowledge, where columns speak of their support, walls declare gravity and power, and materials communicate logic of assembly — not for the sake of construction, but for their constructed-ness of architectural creation. As such, Laugier's architecture is edifice analogous to Lock's philosophical empiricism — or Cordemoy's occasionalism, both insisting clarity, logic, legibility, and a sort of primacy of the knowable real.

Cordemoy parallels John Locke, insofar as he also represents an epistemological break with inherited authority. Where Locke posited that knowledge derives from sensory experience and reflection, rather than innate ideas or divine order, Cordemoy similarly relocates architectural authority from historical precedent to empirical logic, in which sensory appearances are coordinated signs within a world whose order depends on a higher causal agency. (Cordemoy, 1668)

Laugier's tectonic propriety is no nostalgia, but a call for radical clarity. It offers a counter point to direct capricious mannerism and aesthetic commentary — a return to form as consequential and not spectacle. Just as Locke demanded the dismantling of metaphysical opacity in favor of experimental knowledge, Laugier recalled tectonics as a form of intellectual and ethical resistance: designing buildings that are didactic, insofar as they show how they stand, why they exist, and what they mean. In this light, Laugier's stripped down rationality is both a resolution and revelation — a way of building that embraces perception, and insists that architectural experience is framed within the enlightenment truth — not from illusion but from the world itself.

While Laugier's approach may be grounded in the sensation of objects, his rejection of ornamental excess in favor of clear, legible, structural forms, is pursuit of architectural purity leading him to champion column and lintel construction over obfuscating formalism. His advocacy for disengaged columns and the reassertion of a 'just' architecture — a form expressing its structure and purpose without deceit — prefigures what Kenneth Frampton would later theorize as an architecture of tectonics in which *"a certain expressivity arising from the statical resistance of constructional form,"* (Frampton, 2001 pp.19) Beyond structure and construction alone, architecture is rooted in expression and articulation of construction. Later, Rachel Whiteread would further reduce to the form of space itself, devoid of structure and tectonics altogether.

Whiteread's *House* provoked intense and polarized responses upon its installation, eliciting both visceral critique and intellectual acclaim. Locally, it was denounced as "excrescent" and a "monstrosity" — a descriptor deployed by a councilman whose disgust spoke to the perceived abjection of its appearance. (Young, 1993) Within the art world, however, the work was celebrated for its rigorous formal audacity and methodological ingenuity of revealing through destruction. The process of its demolition, which Rachel described to *The Independent* as "brick by brick," involved the removal of the Victorian home immediately following the curing of its cast interior, a choreography in which demolition itself became both the medium and her message. (Walsh, 2010) In this act, Whiteread destabilizes conventional understandings of architecture in relation to common-held beliefs about domesticity (Figure 2).

Figure 2. Existing Victorian terraced house in London's East End

Rachel Whiteread, 'House', 1993

Whiteread's cast reflected an inversion of architectural procedure and a simultaneous refusal for the empiricist doctrine that underwrote Laugier's primitive hut and its enlightenment lineage. Whereas Laugier

sought clarity in the legible assemblage of parts and the communicative nature of their construction, Whiteread annihilated the tectonic reality of the Victorian house, reducing its ornamental property and structural legibility to a negative volume. In doing so, she destabilized the enlightened conviction that architectural experience proceeds from the visual apprehension of discrete elements. For Whiteread, the generator of architectural experience is the unquantifiable presence of space defined by the object, not the object in-of-itself.

This operation is not simply a critique but a violent epistemological counter-gesture. She demonstrated that the physical rendition of space may accrue more architectural consequence than the armature that once enclosed it. Her cast embodies what Laugier and Locke could not account for: that the experiential register of architecture is not derived from the sensory evidence of structure but from the conceptual frameworks we bring to it. It is not, for Whiteread, that knowledge emerges from experience, but that experience is structured through knowledge. Architecture alone does not instruct us, we ascribe space, and subsequently meaning, onto it. The affective charge we attribute to form arises from the conceptual projections we impress upon it. If the physical object fails to determine our experience, then architectural meaning must be located elsewhere: in the void the object circumscribes and the spatial afterimage it frames. In this sense, Whiteread completes the arc that begins with Laugier's empirical rationalism by exposing its limit. Whereas enlightenment thought insisted that architectural truth resides in the knowable real, Whiteread reveals that architecture may reside most powerfully in what cannot be seen or tectonically expressed — a representation of space itself.

3. AN ENLIGHTED INVERSION OF SPACE

For Alberto Pérez-Gómez, in *Architecture and the Crisis of Modern Science*, the Enlightenment is not merely a historical period but a rupture — the moment when architecture, once grounded in cosmology, myth, and embodied ritual, became alienated through the mechanistic worldview of Cartesian science. Perez-Gomez argues Laugier is embelamtic of the Enlightenent's insatiable desire for structural order, as *"he used 'experiments' and observations to ascertain that the most beautiful buildings and objects produced the same positive or negative impressions on himself and others.*" (Perez-Gomez, 1988 pp.62) The Enlightenment replaced the symbolic cosmos with the homogeneous, abstract space of geometry, undermining architecture's role as a mediator between humans and the world. Perez-Gomez traces this transition through figures like Descartes, Locke, Newton, and Laugier, revealing how architecture's shift toward scientific rationalism displaced the moral imagination once at the core of design.

In a search for truth, empiricists held the proverbial upper hand, as that which can be measured is inherently directly observable, unlike the unknowable realm of metaphysics. This dogmatic correlation of observation and truth, however, can delimit humans to passive animalistic participants — ignoring our human capacity to reason itself. An empiricist would claim, as Ernst Cassirer explicates in *The Philosphy of the Enlightenment*, that *"one should no seek order, law, and reason as a rule that may be grasped and expressed prior to the phenomenon, as in a priori; one should rather discover such regularity in the phenomena themselves, as a form of their immanent connection."* (Cassirer, 2009 pp.9)

If the Eighteenth Century embodies the immutability of reason, out task must first be to interrogate its legitimacy and truth. This rebirth of epistemology starts with Descartes, grounded with Locke, but is reset through the transcendental turn of Kant, as an origin to modern philosophical thought. In his *Critiques*, Kant asked whether beauty could be universally valid even while grounded in subjective feeling. Rationality, then, was seen as the means to uncover the universal underpinnings of beauty. This natural order is discoverable through human reason and cognition. The second argument of *The Critique of Pure Reason* is where Kant explicitly states that space is *a priori*, as a necessary representation, which is the ground of all outer intuitions. Kant challenges the ontological understanding of space, when he famously postulates, *"(o)ne can never represent that there is no space, although one can very well think that there are no objects to be encountered in it. It is therefore to be regarded as the condition of the possibility of appearances, not as a*

determination dependent on them, and is an a priori representation that necessarily grounds outer appearances." (Kant, 2009 pp. 158)

With Kant came an assertion that thought is not merely descriptive or analytical, it is itself world constituting. An expert on Kant's life and thought, Cassirer alludes to Kant's view that the mind isn't a passive mirror, but rather *"purely intuitive."* (Cassier, 1981 pp.152) It actively makes the world intelligible by generating basic formative operations, and that everything we know, of nature (external) and of ourselves (internal), rests on those operations. This is a culture-wide restatement of point — objectivity depends on a framework, or scaffolding, supplied by the mind. This manifold of experience is framed, as it were, within us. As Kant indicates, *"(s)ince that within which the sensations can alone be ordered and placed in a certain form cannot itself be in turn sensation, the matter of all appearance is only given to us* a posteriori*, but its form must all lie ready for it in the mind* a priori*, and can therefore be considered separately from all sensation."* (Kant, 2009 pp.156)

For us to make sense of experience requires conception and reason before the fact. As such, no one else can run through anyone else's experiences, as they are framed by subjection conceptions, which differ from our own. This *a priori* conception is a pre-conditioning — the organized residue of past perceptions that shapes how new sensations are taken up, noticed, valued, and anticipated. Where Locke calls raw input sensation, conception is the accrued and ever-updating schema through which sensation becomes salient: memory sediments into patterns of attention; prior judgments attune bias and expectation; emotions set thresholds of resonance; and a metaphenomenological scaffold – of which space, time, and geometry is a part, furnishes the form of experience. As opposed to mere patterns of light and waves of sound, conception is a necessary precondition for sensations to be ordered and understood,

Whiteread's cast of *Room 101* offers a compact illustration of this reversal of perspective. If Kant redirected philosophy from objects determining representation to representation structuring objects, Whiteread performs an analogous inversion in material form. By casting the negative volume of a basement chamber associated with psychological dread, she removes all sensory mechanisms through which the room could originally be known and leaves only the hardened outline of its former presence. The result is not an image of fear, nor an architectural environment that produces it, but the residual form through which the mind reconstructs its meaning. In this way, *Room 101* mirrors the Kantian claim that what we encounter is never the thing-in-itself, but the conditions under which it becomes thinkable. Whiteread presents a space stripped of its empirical cues yet charged with conceptual weight, demonstrating that even fear is mediated not by objects but by the structures the subject brings to them (Figure 3).

Figure 3. Plaster cast of George Orwell's Room 101 from 1984

Rachel Whiteread, 'Untitled (Room 101), 2003

Where Locke or Hume might see observation as the origin of concepts, a metaphenomenological approach sees observation as that which is always already shaped by conceptual relations. The whole precedes the parts, not merely temporally, but structurally. The mind does not passively receive data and build knowledge inductively; rather, it imposes a form of order through which data can appear as coherent in the first place. Thus, the intelligibility of the physical world presupposes an *a priori*, formative act. We call this act, or rather, the study of this *a priori* process, meta-phenomenology.

Metaphenomenology, as we use the term in this paper, designates a mode of inquiry that precedes and exceeds ordinary phenomenological description. It is "meta" not in the sense of abandoning phenomena, but in the sense of interrogating the *a priori* structures that make any phenomena of sense perception possible in the first place. Where classical phenomenology describes how things appear to consciousness, metaphenomenology studies that which must already be in operation before anything can be seen, touched, heard, or inhabited at all. It takes as its object the architectonic conditions of appearance: the formal scaffolding of space and time through geometry that organizes and orients any possible sensory experience.

Laugier's search for the origin, or basis, of architectural characteristics, while similar in approach, differs from metaphenomenological principles, which require an *a priori* investigation of unseen principles, as opposed to pure empiricism and reliance upon the object. Metaphenomenolgy, by its very nature, is a pursuit of that which is greater than, or comes before, phenomena.

In this sense, metaphenomenology is the study of what is of greater necessity and priority than the empirical flow of sensations. It is concerned with the structuring of the "space of encounter" between subject and object, rather than with the catalogue of impressions that pass through this encounter. It emphasizes that architectural and aesthetic experience are grounded in impalpable, conceptual, and spatial forms that condition how phenomena can show themselves. Metaphenomenology thus treats architecture not merely as something experienced, but as a lens through which the very structuring of space and time becomes knowable, so that aesthetic experience can occur at all.

4. ARCHITECTURAL VS. AESTHETIC EXPERIENCE

Kant's Copernican turn reoriented philosophical inquiry by insisting that space is not an empirical container into which objects are placed, but a form of intuition through which objects become thinkable at all. Space, in this sense, is produced by the subject as a condition for experience, rather than received by the world. It is an *a priori* structure that frames all appearances while never appearing itself. Whiteread's *House* emerges precisely within this conceptual shift. By solidifying the void of a domestic interior, she does not present space as an object of perception. It is the material trace of the very form through which perception ordinarily operates. Her cast makes visible what Kant argued could never be encountered directly: space not as empirical fullness but as the subjective framework that renders the empirical possible. In reversing interior and exterior, Whiteread stages the very paradox Kant identified. She reveals space as something that can be made physically present yet never encountered as the pure condition through which experience unfolds.

If Kant claimed that space precedes experience, Whiteread complicates this claim by presenting space at the moment of its withdrawal. *House* is not a representation of domestic architecture but a residue of spatial organization left behind after the ability to inhabit is removed. What remains is neither dwelling nor sculpture, but an index of intuition made inert. The solidified void forces the viewer to confront space in a state stripped of empirical cues. The interaction with space itself is altered entirely, experience is then shifted to the exterior: something previously unable to be seen except by its container — the doomed Victorian house. By denying the sensory scaffolding through which experience normally unfolds, Whiteread effectively stages a test of Kant's proposition. She shows that even when space is rendered materially present, it eludes the sensory mechanisms through which we expect to grasp it.

This strategy extends beyond *House* into Whiteread's broader oeuvre. In *Ghost*, the cast of a living room, the moldings and recesses of a once-livable space appear as raised concrete reliefs, reversing the logic of occupation. The interior that once enveloped bodies now refuses them. The piece proposes that space, once severed from its atmospheric and tactile dimensions, persists as a legible but inaccessible form. Similarly, in *Monument*, the cast of the Fourth Plinth's volume is elevated as a translucent block, an inversion that relocates significance from figure to ground. Here, space is visible but remains uninhabitable. And *Water Tower*, a resin cast of an industrial vessel, isolates a utilitarian void and positions it as a luminous urban marker. Across these works, Whiteread consistently turns inside out the relationship between presence and absence, restoring primacy to the boundary that makes space perceptible while withholding the space itself from experience (Figures 4, 5).

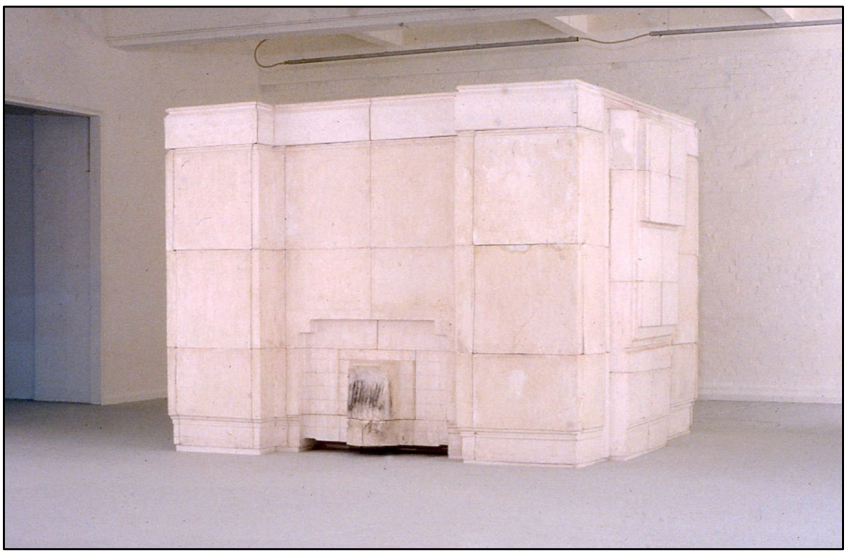

Figure 4. Plaster cast of a living room

Rachel Whiteread, 'Ghost', 1990

Figure 5. Cast of water tower interior, translucent resin and painted steel

Rachel Whiteread, 'Water Tower', 1998

Architectural experience, in the Laugierian empiricist vein, begins from what the senses can confirm. Orders organize bearing, capital mediates transition, proportion stabilizes the eye and body, and rhythmic spacing guides movement and gaze through time. Pleasure here is the felt rightness of correspondence of the senses. Aesthetic experience, by contrast, is grounded in *a priori* conditions that precede any particular sensation. In Kant's transcendental idealism, space and time are the pure forms through which any appearance can be given at all. Metaphenomenologically, this deep structure is articulated as scale and geometry. The experience is heightened when these conditions become perceptible as such: when geometry creates relations beyond material fact, and when scale discloses measure as a mode of meaning. Pleasure, in this sense is deeper and more fundamental, as it is embedded in our mind as a precondition for understanding experience itself. It comes from sensing the lawfulness of our own cognitive affect, an intelligible resonance that makes the enabling structure of experience itself momentarily present. Aesthetic experience is something written into our very process of spatial cognition of a deeper objective reality.

A Rachel Whiteread sculpture makes the *a priori* scaffolds of experience rise to the surface. By casting the negative space of rooms, furniture, or architectural fragments, she turns void into volume and compels you to read geometry through scale as the very subject. What was once the invisible "how" of dwelling becomes a tactile "what." The cast is mute yet exacting. Edges are softened where air once touched walls, surfaces carry seams and pores that index the mold, and the object reads as neither wall nor room but the lawfulness that once ordered both. Your eye cannot rest on ornament or narrative. It is forced to parse pure relations: plane to plane, axis to axis, mass to interval.

That inversion recalibrates the body. You circle a room-cast whose dimensions match human measure, yet you confront it from the outside as a monolith. Scale is felt as pressure and refusal. The piece resists entry, so the imagination performs the act of inhabiting. Whiteread strips away content so the enabling framework

becomes the content. Thinking and feeling join: you grasp the logic of form while registering a tonal pull of loss, stillness, and measure. What pleases is not utility but the felt accord between mind's ordering powers and the world's ordered trace. For a moment the self exceeds itself, dissolving into the very grammar by which it perceives. The sculpture does not depict architecture. It reveals how architecture becomes experience at all.

A Rachel Whiteread sculpture makes geometry at the scale of the body the entire subject. By casting the volume where a body once could be — under a table, within a room, inside a chair — she converts void into measurable mass, forcing you to read proportion, axis, and interval without distraction. The piece presents geometry not as abstraction on paper but as embodied measure: edges register former junctions, planes remember walls, and the block stands as the sum of spatial relations a body would have inhabited.

This is why the experience is aesthetic in the metaphenomenological sense. Proportion clarifies before content appears; dimension declares itself as meaning. As you circle the work, your body performs the proof — counting steps as intercolumniation, sensing span as breath, reading thickness as resistance — until geometry reveals itself as the *a priori* law of appearance at human scale. The object does not depict a room; it discloses how a room's geometry becomes experience.

5. SPACE, TIME, AND GEOMETRY

"Euclid has fully explained every quality of the circle, but has not, in any proposition, said a word of its beauty. The reason is evident. Beauty is not a quality of the circle, it lies not in any part of the line, whose parts are all equidistant from the common center. It is only the effect, which that figure produces in the mind, whose particular fabric or structure renders it susceptible of such sentiments." (Hume, 1826, pp.181)

Space, time, and geometry — which is a coalescence of the experience of space through time — are *a priori* concepts. Geometry is both inherently spatial, and also a man-made provocation. The geometric spirit is *a priori*, insofar as it is by no means bound to any particular field of knowledge. Akin to science, geometry is not a mirror of nature but a symbolic system: a structure of concepts, relations, and equations through which phenomena are expressed, not reproduced. To say that equations or geometries are "man-made" is not to diminish them, but to clarify their epistemic role. Humans are not detached observers, but agents who give form by realizing its conceptual vision in the living, or as Cassirer says, symbolic worlds, in which nature becomes intelligible and humanly meaningful. Cassirer further questions the symbolism of space, indicating that *"(w)e cannot show how something that was previously aspatial achieves the quality fo spaitiality – but we can and must inquire through what mediations mere spatiality passes over into space, how pragmatic space becomes systematic space."* (Cassirer 1957, pp.148-149) In Cassirer's terms, physics, mathematics, and geometry are symbolic forms — each a distinct mode through which human consciousness constitutes a world of meaning. Geometry is the formal condition of this spatially symbolic coherence.

As such, the mind contributes to the form of experience through an *a priori* framing. It creates structures of orders, systems, and concepts, that constitute reality as it appears to us. Cassier elucidates:

"The mind… extends the visible universe beyond all bounds; it traverse the infinity of space and time; and yet it is unceasingly engaged in the production of ever new shapes within itself… these constitute the solid ground of which the entire edifice is constructed by the mind, both in its external and internal aspects, rests, and from which the mind can never depart." (Cassirer, 2009 pp.25)

In other words, the gravitational equation does not reside within matter; it is the conceptual expression of a lawful regularity we discern when we relate phenomena. The equation, as symbol, mediates between the manifold of sensory impressions and the unified structure of thought. This parallels Kant's claim that the laws of nature are the laws of the understanding: we do not read them from the book of nature; we write them in the act of experience.

Harmony is not imposed by God but constituted by the human mind's capacity for symbolic ordering. Causality, gravity, circularity, or curvature — these are not inherent features of the world; they are the forms through which the world becomes intelligible to a via an *a priori* framework of rational being. Without such forms, phenomena would remain an undifferentiated flux. Thus, Cassirer redefines the objectivity of science: it lies not in correspondence with a ready-made world, but in the intersubjective validity of the symbolic structures through which experience is ordered as an object of knowledge. He continues, *"(i)n conceiving space as a unitary synthetic procedure, the lawfulness of geometric and physical geometric forms is revealed to us."* (Cassirer, 1981 pp.193) Cassirer is not indicating that geometry is external, and given to us as it were; rather, that the act of conceiving space is precisely how geometry revealed within us. A consistency and coherence of the relational system, the truth of geometry is functional, not objectively ontic.

Within a metaphenomenological frame, this insight takes on architectural ramifications. If the physical laws of the universe are not in the universe but are constitutive projections of reason, then architecture, too, is not merely the arrangement of matter in space, but the material enactment of those *a priori* relations that make experience of space possible. An *a priori* geometrical conception of space shapes aesthetic experience by giving the mind an innate framework through which it organizes and perceives form. Kant argued that space is not learned from experience but is a built-in structure of intuition — meaning we naturally understand the world through spatial relations such as symmetry, proportion, and continuity. Because these structures are pre-given, geometry becomes a universal language for perceiving harmony and order. When we encounter architectural forms — grids, axes, circles — they resonate with our internal spatial sensibilities, producing feelings of clarity, balance, sublimity, or even unease when those expectations are disrupted. An architectural geometry, as such, activates our deepest perceptual habits, making the aesthetic experience feel both instinctive and profound.

Geometric architecture is symbolic and meaning-laden, forms have long served as abstractions of cultural, spiritual, and philosophical ideas. Geometry becomes a medium for expressing ideals such as purity, perfection, universality, or divine order. Architecture thus becomes an aesthetic physics — a humanly constructed law of relation that translates transcendental forms into inhabitable phenomena spatially. Geometry creates this symbolic structure that mediates the relationship between perception and intelligibility — between the visible and the invisible, the empirical and the transcendental.

In each Whiteread project, cast's surface is where the internal geometry meets the world, where lived space is translated into form. The boundary becomes the essential architectural locus. The cast's surface is where the internal geometry meets the world, where lived space is translated into form. This threshold — neither interior nor exterior — functions as the register through which the absent becomes knowable. Whiteread emphasizes this liminality by preserving the minute inflections of walls and fixtures, evidence of their presence rather than their visual properties. These surfaces declare that space is a condition to be understood through the traces it leaves behind, not a void to be filled. Her work thus positions the edge as the site where intuition and appearance converge.

Such an emphasis on the edge resonates with the conceptual shift introduced by Kant: the recognition that the structures enabling experience often escape experience itself. Whiteread materializes that escape. Her casts display the conditions of spatial organization while simultaneously blocking the bodily participation through which these conditions are usually confirmed. In this sense, her work is less a commentary on architecture than a study of its epistemological foundations. She shows that architecture can be apprehended through the mind's reconstruction of what cannot be entered. She reveals to the degree in which spatial understanding depends on *a priori* structures rather than empirical immersion.

Viewed in this light, Whiteread's purification of interior geometries recalls earlier associations between form and transcendence. By extracting pure volumes from the everyday, she returns them to an abstract clarity that precedes use and function. These forms, removed from occupation yet shaped by it, evoke an order that is not empirical but ideal. The cube, the block, the cylinder, echo the historical conviction that geometry carries an intrinsic, almost sacred authority. In transforming inaccessible interiors into

autonomous geometric artifacts, Whiteread reveals that the structures organizing experience may themselves partake in a lineage of forms long associated with a divine architecture.

6. JANUS: A SUMMING UP

Geometry is neither ornament nor abstract diagram. It is a transcendental interface through which space becomes thinkable and inhabitable. Laugier's empiricist clarity locates architectural truth in legible relations of parts and their sensed adequation to purpose. Kant's transcendental turn relocates that truth in the *a priori* forms that make any relation legible at all. Rachel Whiteread's inversions materialize this shift: by casting voids, her work brings geometry, scale, and edge to the surface, revealing the enabling structures of experience once content is suspended.

The distinction follows accordingly. Architectural experience begins with phenomena the body can test—bearing and borne, proportion and rhythm, temperature and echo. Aesthetic experience begins one stratum deeper, where the mind's preconditions — space, time, and geometry at human scale — quietly govern what can be sensed as order. Whiteread denies occupation while preserving measure, converting absence into an index of relations that ordinarily withdraw from view, and thus binding Enlightenment empiricism to transcendental critique.

Metaphenomenology names the method that unites these insights. It studies conditions before content and treats geometry as a formative power that organizes attention, valuation, and memory prior to program or style. The interior emerges as an edge where mind and world meet, catalyzing meaning rather than containing it. The practical consequence is clear: briefs can specify structures of experience, and pedagogy can train designers to stage the *a priori* through proportion, sequence, and light. When phenomena and preconditions are composed together, architecture becomes a catalyst for meaning. Geometry then is not what a building possesses but what a world requires in order to appear.

Scientific and aesthetic order is symbolic, not ontic. The world does not contain laws, geometries, or causes; these arise in and through the human act of synthesis by which the manifold of experience is rendered intelligible. The physical world, therefore, is not law-governed in itself; it becomes lawful only as it enters the horizon of human understanding. This postulate reframes the traditional opposition between "natural" and "constructed." If the laws of physics and geometry are constructs that enable experience, then the architectural act participates in the same transcendental function: it is a material epistemology — a way of knowing the world through the articulation of space and form, one originated with Locke, reversed by Kant, and illustrated by Whiteread.

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