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participation



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Contents

Hayriye EŞBAH TUNÇAY • Editor Participation (Editorial)	I-II
Madhumathi PRABHUKUMAR, Bhoomika UMASHANKAR, Suman BILIGEREPALYA LOKESH Cost-effective construction strategies for affordable housing in India: A comparative analysis	271-286
Nizami OZCELIK, F. Heyecan GIRITLI Integrated project delivery in the AEC sector: A four-step systematic literature review	287-308
Kübra YAŞAR, Zeynep KUBAN TOKGÖZ Voicing the local interests: Expectations from the Trabzon-Erzurum Road and local demands in the Late Ottoman Gümüşhane	309-323
Burak ÖZTÜRK, Yıldız SALMAN Prize for sheltering: Architectural competitions and displaying the social housing production in mid-century Istanbul	325-344
Büşranur ASLAN, Cem BÜYÜKSURAL, Hümeysra BİROL Reconstitution of the memory: Renovation of the Alsancak Cigarette Factory	345-361
Raghad FADHIL, Ghada AL-SLIK, Dorota WORONIECKA-KRZYZANOWSKA How decisions are made: Urban and architectural transformations of a modern residential district in Baghdad (1958-2024)	363-385
Ceren IŞIL, Burçin BAŞYAZICI, Berna GÖL, Mari ITO ALPTÜNER Playing children: Documenting autonomy-supportive space using an architectural-psychological method	387-404
Yasin Çağatay SEÇKİN Cities as playgrounds: <i>Oyun İstanbul</i> ¹ as a case study	405-417

Participation

Hayriye EŞBAH TUNÇAY • *Editor*

Vandana Shiva states: “The way we design the world determines how we relate to it in real life. When we design without understanding our limits, we trespass the limits of our planet. When design is carried out with an awareness of the interconnectedness of relationships, it strengthens these relationships.” The July 2026 issue of *A/Z* focuses on one of the foundational concepts in establishing this network of relations — participation. Rather than confining participation to the narrow framework of “participatory design” alone, the issue approaches it through a broader lens shaped by the modes of interaction among the diverse actors involved in design and planning practices. Spanning from the child’s autonomy in the play space to local communities’ negotiation with the state, from professional collaboration models to housing access, this breadth reveals the multi-layered place of the concept within the discipline of architecture and planning.

The eight articles featured in this issue underscore that participation is a significant phenomenon that can be addressed across different scales, periods, and geographies. For instance, “Cities as Playgrounds” positions the child as the subject of space and examines the potential of urban play areas designed with children to transform the city into a “playable city,” through the “Play Istanbul” initiative developed under the Istanbul Metropolitan Municipality; while “Playing Children” documents the spatial autonomy of preschool children during play through an architectural-psychological method, revealing how the physical environment supports or constrains autonomy. Both articles demonstrate the child as an active participant in the use and organization of space.

“How Decisions are Made” analyzes the urban and architectural transformation of the Zayouna district in Baghdad through Anthony Giddens’ structuration theory, revealing how top-down and bottom-up dynamics operate in decision-making processes.

Another article, “Prize for Sheltering,” examines how the production of social housing is transformed into a public process and gains visibility through exhibition, emphasizing competitions as a representation of participatory practice. Both articles focus on the institutional and governance dimensions of participation, enabling us to understand the role of different actors and mechanisms in the processes of space production.

“Voicing the Local Interests” addresses the demands and expectations that local communities conveyed to the state through petitions in response to the route change of the Trabzon–Erzurum road, through the case of Gümüşhane. This article demonstrates that, although participation emerges as a contemporary concept, it has historically served as an instrument for communities to make their voices heard.

Two articles in the issue reveal that participation is not limited to involving users in the process; the production of accessible, buildable, and sustainable space is itself a form of participation. In this context, “Integrated Project Delivery in the AEC Sector” analyzes the integrated project delivery method, developed in response to low productivity and insufficient collaboration in the architecture-engineering-construction sector, through a systematic literature review. “Cost-Effective Construction Strategies for Affordable Housing in India” presents a comparative analysis of construction techniques in the production of affordable housing for low-income populations in India, demonstrating that housing access is a social participation issue as much as a technical one.

“Reconstitution of Memory” examines the formation and transformation process of a memory place through the case of the Alsancak Cigarette Factory. The article reveals that the factory, established in 1884 as part of İzmir’s industrial zone, held a significant place in collective memory beyond tobacco production as a place of belonging for its employees and their families; and that the meanings ascribed to the place through experiences, emotions, and testimonies collectively produced it as

a memory place. Discussing the impact of intervention in this transformation process and the new role of the memory place in urban identity, the article makes visible how the experiences and memories of individuals and communities constitute a form of participation in the conservation and re-production of heritage places.

As A/Z, in this issue, in keeping with the journal's culture of critical, interdisciplinary, and open debate, we aimed to make visible the multi-dimensional, multi-scalar, and methodologically diverse place of the concept of participation in architectural and planning research.

We wish you an enjoyable read.

Cost-effective construction strategies for affordable housing in India: A comparative analysis

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Abstract

This research paper undertakes a comparative analysis of low-cost construction techniques with the aim of facilitating affordable housing solutions in India, where a significant portion of the population faces income constraints. With only 20% of the population earning higher incomes, ensuring housing costs remain within 30% of household income is imperative. The study focuses on evaluating the effectiveness of various construction methodologies, particularly emphasizing masonry wall and slab construction, in achieving cost efficiency, structural sustainability, and longevity. Emphasizing the importance of innovative construction approaches, such as the “rat trap bond, filler slab” methodology and the utilization of locally available materials like laterite stone, the paper aims to reduce construction costs while maintaining structural integrity. Through a comprehensive comparative analysis considering factors such as initial construction expenses, long-term maintenance costs, structural strength, and durability, the research provides valuable insights for policymakers, construction professionals, and stakeholders. The findings aim to address the urgent need for affordable housing solutions, contributing to sustainable and cost-effective practices in residential construction and promoting inclusive urban development to enhance living standards for marginalized communities in India and other developing countries.

Keywords

Filler roof slab, Laterite stone masonry, Low-cost housing, Rat trap bond, Sustainable materials.

1. Introduction

In the realm of housing, particularly in developing countries like India, the use of low-cost construction technologies has gained considerable momentum due to their potential to offer affordable and sustainable shelter solutions to economically vulnerable populations (Arun, 2021). This concern extends across developing Asia, where persistent income disparities and rapid urban growth have intensified housing affordability challenges (Helble, 2021). These technologies challenge conventional construction practices by prioritizing cost-effectiveness, material efficiency, and resource-conscious methods, without compromising structural integrity or long-term performance. National technical agencies such as the Building Materials and Technology Promotion Council have actively promoted innovative, resource-efficient, and cost-effective construction technologies to enhance affordability, sustainability, and large-scale adoption in housing projects (BMTPC Building Materials and Technology Promotion Council, 2020). The essence of low-cost housing lies not only in reducing construction expenditure but also in embracing environmentally responsible practices. Techniques such as rat trap bond masonry and filler slabs—designed to reduce material usage and structural load—exemplify this shift. These innovations are especially well-suited for regions with weak soil conditions and limited infrastructure. Additionally, the use of indigenous materials like terracotta pots, laterite blocks, and country tiles enhances both thermal performance and visual character while supporting local economies and craftsmanship (Marinelli, 2022). However, the deployment of such technologies must be understood within the broader regulatory and institutional framework of India's construction sector. Residential real estate development in India is governed by a complex array of laws, codes, and standards. Key regulatory frameworks include the National Building Code of India (Bureau of Indian Standards [BIS], 2016), The Real Estate Act (Regulation

and Development) (RERA, 2016) and various state-level bye-laws and zoning regulations. These establish minimum requirements for structural safety, fire protection, sanitation, building design, and environmental compliance as stated in Central Public Works Department (CPWD, 2021) & Real Estate (Regulation and Development) Act (RERA, 2016). In the context of low-cost housing, these norms play a dual role—ensuring safety and quality, while sometimes inadvertently increasing the cost and complexity of compliance, especially for smaller-scale or community-driven projects (Moghayed, 2021). Further, the sector faces several institutional and administrative barriers that hinder the widespread implementation of affordable housing. These include lengthy approval processes, inadequate access to subsidized land, rigid building codes, limited availability of low-interest housing finance, and lack of awareness or acceptance of alternative technologies among both policymakers and end-users. While national schemes like Pradhan Mantri Awas Yojana (PMAY), Ministry of Housing and Urban Affairs (Ministry of Housing and Urban Affairs (MoHUA), 2022) aim to accelerate housing supply for the urban poor, ground-level implementation is often challenged by bureaucratic delays and misalignment between policy objectives and local needs (Marinelli, 2022). As a result, even well-intentioned low-cost housing initiatives can become entangled in a web of regulatory constraints, technical conservatism, and socio-economic exclusion. Addressing these challenges requires not only technological innovation but also institutional reforms that recognize and support context-specific, community-friendly construction approaches. Against this backdrop, the present study aims to examine the effectiveness of various low-cost housing construction technologies in delivering affordable, durable, and environmentally responsive housing. Through comparative cost analysis and field-based observations, the paper explores the real-world application of these techniques and their potential

to address India's persistent housing shortfall. By situating technical performance within broader socio-economic and regulatory frameworks, this study contributes to the discourse on inclusive and sustainable urban development. Globally, sustainable urbanization has been identified as a critical pathway for addressing housing shortages, environmental degradation, and socio-economic inequality in rapidly expanding cities (UN-Habitat, 2020).

2. Literature review

Affordable housing remains a pressing issue in India, where a significant portion of the population struggles to access adequate housing due to economic constraints. This challenge is not unique to India but reflects a broader trend across developing Asian economies, where rapid urbanization, income inequality, and rising land prices have significantly widened the housing affordability gap (Helble, 2021).

Technical evaluations and demonstration projects compiled by the Building Materials and Technology Promotion Council highlight the performance, feasibility, and scalability of alternative low-cost construction technologies, including filler slabs, rat trap bond masonry, and locally sourced materials (Building Materials and Technology Promotion Council [BMTPC], 2020). One such technique gaining traction is the use of filler slabs in roof construction. Filler slabs involve replacing a portion of the concrete in the slab with filler material, such as terracotta pots or country tiles, to reduce the overall concrete requirement and construction costs (Pattanashetti, 2017). Studies have shown that filler slabs can offer significant cost savings compared to conventional reinforced concrete slabs while maintaining structural stability and thermal comfort (Natarajan, 2019). This approach aligns with broader sustainable construction principles, as discussed by Arun (2021), who emphasize the importance of cost-effective and thermally efficient roofing options for the economically weaker sections (EWS). Their study supports the use of filler

slabs and locally available materials to meet both cost and energy-efficiency goals.

In addition to filler slabs, alternative masonry techniques have also been explored to reduce construction costs in wall construction. According to Subha Sinha (2020), rat trap bond masonry involves arranging bricks to create a cavity within the wall, reducing the number of bricks and mortar required while maintaining structural strength. Similarly, Maklur and Narkhede (2018) found that the use of locally available materials such as laterite stone in masonry construction offers cost-effective solutions for affordable housing. According to Raj (2021), laterite and other earthen blocks offer considerable material and thermal advantages when used in wall systems. Their work also highlights the compatibility of rat trap bond masonry with labor-intensive, low-cost housing projects—demonstrating reduced material use, enhanced thermal performance, and ease of implementation with local skills.

Tam (2011) noted that although low-cost construction techniques can reduce construction costs, their effectiveness varies depending on factors such as local material availability, labor costs, and construction practices. Therefore, a comprehensive comparative analysis is essential to determine the most suitable construction techniques for affordable housing projects in India. This is further reinforced by Moghayedi (2021), who provide a critical success framework indicating that material efficiency, stakeholder awareness, and local adaptability are key to the scalability of affordable housing solutions. Their systematic review also calls for integrating sustainability metrics into cost analysis, an aspect considered in the present study.

This paper aims to contribute to the existing body of knowledge by conducting a comparative analysis of various low-cost construction techniques, including filler slabs and alternative masonry methods, to identify the most cost-effective solutions for affordable housing in India. By synthesizing findings from existing literature and conducting empirical analysis, this study

seeks to provide valuable insights for policymakers, practitioners, and researchers involved in addressing the housing needs of marginalized communities in India. At the urban scale, sustainable housing delivery plays a vital role in achieving broader goals of inclusive growth, environmental resilience, and social equity, particularly in rapidly urbanizing regions (UN-Habitat, 2020).

2.1. Masonry

2.1.1. Laterite stone masonry

Laterite stone in Figure 1 is a sedimentary rock characterized by its red or brown coloration, initially discovered in the Malabar region of coastal Kerala and other parts of Karnataka, including Dakshin Kannada. Compared to bricks, laterite stone is known for its cost-effectiveness in construction. Its distinct properties include the ability to retain coolness within walls, offering more comfortable interiors during hot summers. Furthermore, due to its larger size, laterite stone contributes to savings on labor and other construction materials, making it an attractive option for building projects aiming for both efficiency and affordability. Raj (2021) and Arun (2021) emphasize that laterite, when sourced locally, not only reduces transportation costs but also supports sustainable construction. These studies suggest that laterite-based masonry, while traditionally limited to single or double-storey structures due to load-bearing constraints, is ideal for rural and peri-urban low-rise housing.

The use of laterite is cost effective as compared to concrete blocks. It reduces cost of plastering and painting. It reduces heat within the house. The porosity of laterite stones is more than bricks. Thus, load bearing structure of laterite masonry cannot be more than

double storey. The darker the laterite, the harder, heavier and more resistant to its moisture.

Laterite stone presents a sustainable solution for building materials, capable of meeting the demands of construction while promoting environmental and economic benefits. By encouraging research on local materials and implementing efficient training programs on earth-based construction techniques, laterite can significantly contribute to solving the problem of affordable housing. Utilizing local materials like laterite reduces construction costs, making housing more accessible to a wider population. Moreover, laterite stone is ecological, as it reduces nuisances and pollution associated with cement and steel production, thus mitigating environmental impact. Additionally, its inherent thermal insulation properties contribute to lower energetic costs, further enhancing its sustainability credentials. Maklur and Narkhede (2018) states that the utilization of laterite stone offers a holistic approach to sustainable construction, addressing both economic and environmental concerns in the housing sector.

2.1.2. Rat trap bond

Rat trap bond masonry is suitable for areas with poor soil bearing capacity, making it a viable construction technique for regions, where soil conditions may pose challenges for traditional construction methods. Unlike traditional bonds like English or Flemish, where bricks lay flat, the rat trap bond positions bricks on edge, creating inner and outer faces of the wall with cross bricks connecting them. The key advantage of this technique lies in its ability to reduce the requirement of bricks and mortar compared to English or Flemish bonds, thanks to the cavity formed



Figure 1. Sample of Laterite stone (Left), Construction of Laterite stone masonry (right).

within the wall. This optimization of material usage maintains structural integrity, rendering the rat trap bond a cost-effective and efficient method for masonry construction. The study by Raj (2021) highlights the thermal and acoustic benefits of rat trap bond masonry in hot climates, noting its potential to reduce indoor temperatures and improve living comfort. Its lower material usage and skilled-labor adaptability make it particularly suitable for large-scale EWS housing.

In rat trap bond masonry, bricks are arranged vertically so that the 110 mm face is visible from the front elevation, unlike the traditional orientation where the 75 mm face is visible as shown in Figure 2. This arrangement maintains the standard wall width of 230 mm while creating a cavity inside the wall. To reinforce the brickwork, both vertical and horizontal reinforcing bars are installed within the cavities as shown in Figure 2. This configuration enhances structural strength and durability while enabling the placement of electrical conduits and plumbing lines within the cavity, thereby improving the overall aesthetics of the finished wall. Muhammad Haris (2021) identifies rat trap bond masonry as an efficient construction technique that optimizes material usage while maintaining structural integrity and providing flexibility for the integration of utility services.

The construction of a rat trap bond involves arranging bricks in a manner that creates a cavity within the wall while maintaining structural integrity. In the T junction configuration, vertical bricks are placed on edge to form the inner and outer faces of the wall, with cross bricks bridging the two fac-

es at the junction. This configuration allows for the formation of a cavity within the wall, reducing the number of bricks and mortar required while maintaining strength.

Similarly, in the L junction configuration, bricks are arranged in a manner that creates a right angle, with vertical bricks forming the inner and outer faces of the wall and cross bricks bridging the two faces at the corner junction. This configuration also creates a cavity within the wall, optimizing material usage and structural stability.

2.2. Filler roof slab

Filler slab roof construction is a technique employed in building projects, particularly in endeavors focused on low-cost housing solutions, aiming to create lightweight and economical roofing structures. This method entails substituting a portion of the concrete in the roof slab with filler materials, including locally available resources like clay pots, coconut shells, or other suitable materials as in Figure 3. According to Arun (2021), filler slabs are particularly effective in reducing the dead load of roofing systems, which not only brings down construction costs but also lessens foundation loads in weak soil zones. Their study shows strong energy and cost benefits in tropical and subtropical climates, supporting the thermal comfort claims often attributed to filler slab construction.

The fundamental principle of filler slab construction is based on the understanding that, in an RCC (reinforced cement concrete) slab of a given thickness (see Figure 3), the concrete in the lower portion primarily functions as dead weight and does not significantly contribute to compressive

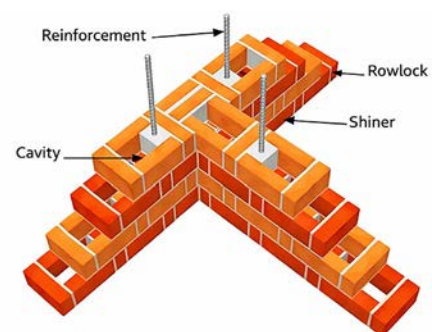


Figure 2. (Left) Arrangement of bricks in Rat trap masonry courses; & (Right) Construction detail.

load resistance (Chougule et al., 2015). In an RCC structure, the upper portion of the slab primarily bears compressive loads. Therefore, replacing the concrete in the lower half with suitable filler materials enhances cost-effectiveness and reduces structural weight while preserving overall structural integrity and functionality (Subha Sinha, 2020). This approach contributes to more efficient material utilization in low-cost construction. This technique underscores the importance of optimizing construction materials and methods to achieve sustainable and affordable housing solutions. This aligns with observations by Raj (2021), who emphasize that filler slabs reduce embodied energy and improve the indoor thermal environment, especially in hot-humid climates.

The filler slab roof construction technique is a method used to create lightweight and cost-effective roofing structures, particularly in low-cost housing projects. Here is an outline of the filler slab roof construction technique:

Preparation: The construction process begins with the preparation of the site and the assembly of the necessary materials and tools. This includes arranging the filler materials, such as clay pots, coconut shells, or other locally available materials, and setting up the shuttering framework.

Shuttering: Shuttering, also known as formwork, is installed to create the framework for the roof slab. The shuttering is typically made of wood, metal, or other suitable materials and is assembled to the desired dimensions and shape of the roof.

Reinforcement Placement: After the shuttering is in place, reinforcement bars (rebars) are installed within the shuttering framework. The reinforcement bars are arranged in a grid pattern and are positioned according to structural design requirements to provide strength and support to the roof slab.

Preparation of Filler Materials: Before casting the concrete, the filler materials are prepared. For example, if clay pots are used as filler material, they may be soaked in water to prevent them from absorbing moisture from the concrete mix during casting.

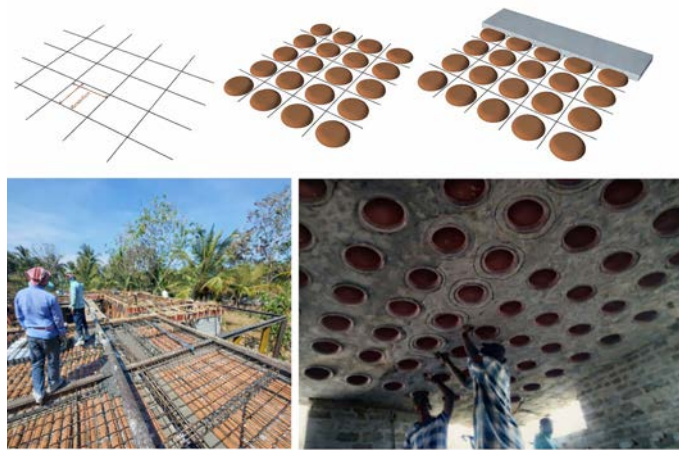


Figure 3. RCC Filler Slab construction (above – the process of laying & below - site construction).

Concrete Casting: Once the filler materials are prepared, the concrete mix is poured into the shuttering framework. The concrete covers the reinforcement bars and filler materials evenly, ensuring that they are fully encased within the slab. Care is taken to ensure that the concrete mix is properly compacted and leveled to achieve a smooth and uniform surface.

For instance, for Mangalore tiles, a grid size of 35cm x 50cm is typically utilized, whereas for clay pots with a 40cm diameter, a grid size of 45cm x 45cm is more suitable. It's essential to soak the filler material in water before casting to prevent it from absorbing water from the concrete. Subsequently, the slab is cast using cement concrete, following the same procedures employed for ordinary concrete slabs.

2.2.1. Considerations for filler material

When considering filler material for construction projects, several key factors must be taken into account to ensure optimal performance and cost-effectiveness. Firstly, the filler material should possess inert qualities, safeguarding against adverse reactions with steel or concrete components to maintain structural integrity over time. Additionally, prioritizing lightweight options enhances construction efficiency while minimizing material costs, aligning with the goal of affordability. Local availability further streamlines procurement processes and reduces environmental impact associated with transportation. Size

compatibility is paramount, ensuring the filler material fits within the designated structural grid and bottom half of the slab, facilitating seamless integration into the construction process. Emphasizing thermal insulation properties contributes to enhanced indoor comfort, particularly in regions with extreme climates, promoting sustainable living environments. Lastly, aesthetics play a crucial role, with considerations for the shape and finish of the filler material enhancing the overall visual appeal of the constructed space. These design and performance considerations are also highlighted by Moghayedi (2021) who argue for an integrated approach combining functionality, cost-efficiency, and environmental responsibility in sustainable affordable housing solutions. By addressing these considerations, the selection of filler material not only meets structural requirements but also reflects a holistic approach to sustainable and aesthetically pleasing construction practices.

2.2.1.1. Terracotta pots filler slab

The terracotta pots filler slab is a variation of filler slab construction technology, wherein a portion of the concrete in the slab's bottom is substituted with terracotta pots as shown in Figure 4. This innovative approach aims to optimize material usage and reduce construction costs while maintaining structural integrity. Terracotta pots, known for their lightweight and insulating properties, serve as an ideal filler material in this context. Arun (2021), affirm the utility of terracotta pots in filler slabs, citing significant cost savings and a reduction in the building's cooling load, especially in tropical and semi-arid regions. Their analysis supports the practical and environmental

advantages of this technique for low-income housing.

By incorporating terracotta pots into the slab, the overall weight of the structure is minimized, resulting in cost savings and improved thermal insulation. This sustainable construction method not only enhances affordability but also contributes to creating comfortable and energy-efficient living spaces. The terracotta pots filler slab exemplifies the ingenuity and practicality of leveraging locally available materials to address housing challenges and promote sustainable building practices (Janmesh Bhoir, 2023).

2.2.1.2. Country tile slab

The country tile slab represents a variant of filler slab construction technology, where a segment of the concrete in the bottom of the slab is substituted with country tiles as shown in Figure 5. This innovative approach aims to optimize material usage and reduce construction costs while upholding structural integrity. Country tiles, renowned for their lightweight and insulating characteristics, are well-suited as filler material in this context. By integrating country tiles into the slab, the overall weight of the structure is diminished, leading to cost-efficiency and enhanced thermal insulation. The Raj (2021) and Moghayedi (2021) advocate for the reuse of vernacular materials like country tiles, citing their compatibility with sustainable design principles and local construction cultures. Their inclusion also supports employment generation in small-scale tile industries. This method illustrates how context-sensitive material choices can align affordability, comfort, and sustainability. The country tile slab model underscores the value of drawing from indigenous knowledge systems to create resource-efficient housing in the Indian context.



Figure 4. Terracotta Pots Filler Slab (left: construction of the slab, right: finished view of the slab).

Cost-effective construction strategies for affordable housing in India: A comparative analysis

3. Methodology

This research adopts a quantitative, analytical, and comparative approach to evaluate the cost-effectiveness, efficiency, and sustainability of select low-cost construction methods commonly employed in affordable housing schemes across India. The methodology integrates a systematic literature review, field-based visual observations, and a standardized hypothetical modeling framework to derive objective, data-driven insights into material usage, labor productivity, and construction feasibility as shown in the flow chart in Figure 6.

Primary data were collected through structured field visits to three ongoing low-cost housing construction projects located in Pavagada, Mangalore, and Bangalore, Karnataka, conducted between January and April 2024. The selected case study sites employed alternative construction techniques, including rat trap bond masonry, laterite stone block masonry, and filler slab roofing systems incorporating terracotta pots, country tiles, and Mangalore tiles. These techniques were chosen based on their documented effectiveness in enhancing cost efficiency and sustainability in affordable housing delivery (BMTPC Building Materials and Technology Promotion Council, 2020). Each site was observed over a period of 2–3 days, during which comprehensive documentation was undertaken through direct visual observation, systematic photographic recording, and semi-structured interviews with site engineers and skilled masons. The collected observational data encompassed material specifications, labor deployment and productivity, construction sequencing and duration, and the adaptability of these techniques to varying site and environ-

mental conditions, thereby enabling a robust comparative evaluation of their practical feasibility and performance.

Secondary data for this study was obtained through a structured systematic literature review. Searches were conducted across electronic academic databases, including ScienceDirect, SpringerLink, ResearchGate, and Google Scholar, using predefined keywords such as “low-cost construction India,” “rat trap bond masonry,” “filler slab,” “laterite masonry,” and “affordable housing technologies.” The initial search yielded approximately 85 publications. After screening titles and abstracts for relevance to the study’s objectives and removing duplicates, 32 articles were shortlisted. Of these, 15 articles were included in the final review based on their specific focus on cost-benefit analysis, material efficiency, sustainability, and applicability within the Indian affordable housing context.

In addition to peer-reviewed literature, supplementary technical references—including State PWD manuals, the CPWD Schedule of Rates, vendor quotations, and previously published case studies—were consulted to establish realistic unit rates for materials and labor. This mixed-source data foundation enabled a robust comparative assessment of low-cost construction techniques grounded in both academic research and practical field conditions. To enable accurate and consistent comparison, a normalized hypothetical case model was developed. This model comprised a 10-meter-long, 3-meter-high masonry wall and a 10-meter by 10-meter slab, reflecting common unit dimensions found in Economically Weaker Section (EWS) housing layouts in India. The use of a hypothetical yet representative module allowed for



Figure 5. Country Tile Filler Slab (left: construction of the slab, right: finished view of the slab)

methodical comparison across techniques while ensuring relevance to practical building configurations.

The study focuses on a comparative evaluation of three wall systems—conventional brick masonry, rat trap bond masonry, and laterite stone masonry—and four slab systems—conventional RCC slab, filler slab with terracotta pots, country tile filler slab, and Mangalore tile roofing with concrete base. For each construction type, cost analysis was carried out under three primary parameters: Material costs, labor costs, estimated construction duration.

Additionally, a 5% allowance for miscellaneous costs (e.g., site overheads, temporary supports, scaffolding, tools) was included to approximate real-world construction variables.

All cost estimations were calculated in Indian Rupees (INR). To improve comprehension for an international audience, total costs—including subtotals and overheads—were also converted into US Dollars (USD) and Euros (EUR).

By integrating rigorous field data collection, structured literature review, and comparative cost modeling, this methodology provides a robust framework for assessing low-cost construction techniques. The findings are expected to support policy makers, architects, and developers in identifying viable, scalable, and locally suitable approaches to addressing India's ongoing affordable housing needs, particularly in regions with constrained resources and rising urban demand.

4. Analysis

In the analysis, the focus revolves around estimating material requirements for various types of masonry walls, including brick masonry, laterite stone masonry, and rat trap bond masonry,

all with a thickness of 9 inches. This comprehensive analysis aims to provide insights into the intricate process of estimating materials for different construction methodologies, shedding light on the practical considerations and challenges involved in each scenario.

4.1. Masonry wall

Masonry walls are a fundamental component of building construction and are known for their durability, strength, and versatility. These walls can serve various purposes, including providing structural support, partitioning spaces, or acting as protective barriers. Masonry walls come in different types, each with its characteristics and applications. The construction process involves laying individual masonry units in a pattern and bonding them together with mortar, a mixture of cement, sand, and water.

The estimation for masonry entails calculating the number of bricks and volume of mortar required for constructing a wall with specified dimensions. For the estimation, a wall with dimensions of 10 meters in length, 3 meters in height, and a thickness of 9 inches, and a cement mortar mix ratio of 1:6 is considered.

4.1.1. Estimation for brick masonry (9" thick)

Estimating materials for brick masonry with a thickness of 9 inches, using bricks measuring 9 inches in length, 10 inches in width, and 13 inches in height, involves a systematic process. Initially, the total area of the wall to be constructed is calculated based on its dimensions. Then, the number of bricks required is determined by dividing the wall area by the surface area of one

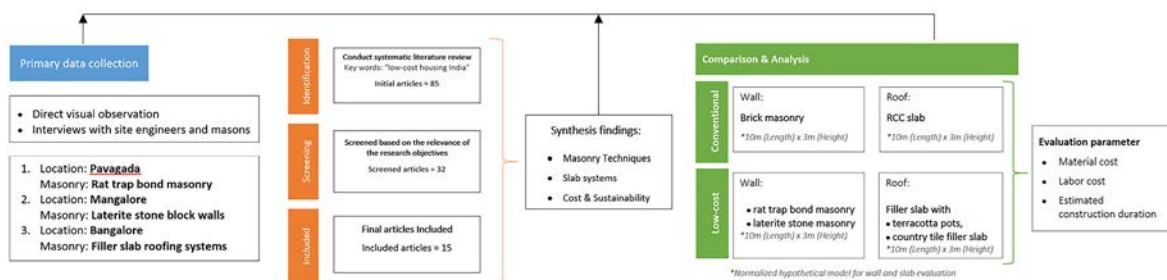


Figure 6. Methodology Flowchart.

brick, accounting for mortar joints. Additionally, the volume of mortar needed is calculated based on the mortar mix ratio, considering factors like cement and sand proportions.

Considering the wall measuring 10m x 3m for estimation, Table 1 (i) shows the calculation for the brick masonry.

4.1.2. Estimation for laterite stone masonry (9" thick)

Estimating materials for laterite stone masonry with a thickness of 9 inches is essential for effective construction planning, especially in regions rich in laterite deposits. Laterite stone, known

for its unique red or brown coloration, holds significant value in building construction due to its durability and aesthetic charm. When estimating materials for laterite stone masonry, several factors come into play. The dimensions of the wall, including its length, height, and thickness, must be carefully measured to determine the required quantity of laterite stones. Additionally, the irregular shape and size of laterite stones present a challenge in estimation, requiring meticulous consideration to ensure accurate calculations. Moreover, the mortar mix ratio, specifying the

Table 1. Estimation for (i) Brick Masonry, (ii) Laterite Masonry & (iii) Rat Trap Bond Masonry.

i) ESTIMATION OF BRICK MASONRY									
Sl. No	Description of work	Unit	Nos.	Length	Breadth	Depth	Quantity	Rate	Amount
1	Brick for masonry including transportation loading and unloading (9"x10"x13"); B.R – Rs.18)	Nos	2458				2458	₹ 25.00	₹ 61,450.00
2	Cement mortar (1:6)	Cft	1	56			56	₹ 250.00	₹ 14,000.00
3	Labor charges	Sft	1	32.8	9.85		323.08	₹ 120.00	₹ 38,769.60
Sub total									₹ 1,14,219.60 (\$ 1,309.14)
Miscellaneous (10%)									₹ 11,421.96 (\$ 130.91)
Grand total									₹ 1,25,641.56 (\$1440.05)
ii) ESTIMATION OF LATERITE MASONRY									
Sl. No	Description of work	Unit	Nos.	Length	Breadth	Depth	Quantity	Rate	Amount
1	Laterite for masonry including transportation loading and unloading (9"x10"x13"); B.R – Rs.28)	Nos	274				274.00	₹ 43.00	₹ 11,782.00
2	Cement mortar (1:6)	Cft	1	20			20.00	₹ 250.00	₹ 5,000.00
3	Labor charges	Sft	1	32.8	9.85		323.08	₹ 160.00	₹ 51,692.80
Sub total									₹ 68,474.80 (\$ 784.83)
Miscellaneous (10%)									₹ 6,847.48 (\$ 78.48)
Grand total									₹ 75,322.28 (\$ 863.31)
iii) ESTIMATION OF RAT-TRAP BOND BRICK MASONRY									
Sl. No	Description of work	Unit	Nos.	Length	Breadth	Depth	Quantity	Rate	Amount
1	Brick for masonry including transportation loading and unloading (9"x10"x13"); B.R – Rs.18)	Nos	2458				1844	₹ 25.00	₹ 46,100.00
2	Cement mortar (1:6)	Cft	1	42			42	₹ 250.00	₹ 10,500.00
3	Labor charges	Sft	1	32.8	9.85		323.08	₹ 120.00	₹ 38,769.60
Sub total									₹ 95,369.60 (\$ 1093.60)
Miscellaneous (10%)									₹ 9,536.96 (\$ 109.31)
Grand total									₹ 1,04,906.56 (\$ 1202.40)

proportion of cement to sand, is crucial for determining the amount of mortar needed to bond the laterite stones together securely. By carefully considering these factors, the accurate estimation can be achieved, facilitating successful and durable laterite stone masonry construction projects.

Considering the wall measuring 10m x 3m for estimation, Table 1 (ii) shows the calculation for the laterite stone masonry.

4.1.3. Estimation for rat trap bond (9" thick)

The estimation process for rat trap bond masonry involves several key considerations. First, the dimensions of the wall, including its length, height, and thickness, are carefully measured to determine the total surface area to be covered. Next, the size and quantity of bricks needed for the project are calculated, taking into account the specific layout of the rat trap bond pattern and the spacing between bricks. Additionally, the volume of mortar required to bond the bricks together and fill the cavities is determined based on the mortar mix ratio. Furthermore, factors such as labor costs, availability of materials, and any additional construction requirements must be considered during the estimation process.

Considering the wall measuring 10m x 3m for estimation, Table 1 (iii) shows the calculation for the rat trap bond masonry.

4.1.4. Inference

When comparing brick, laterite, and rat trap bond masonry, the analysis shown

in Figure 7 reveals that laterite stone masonry emerges as the most cost-effective option. Despite the popularity of brick masonry and the efficiency of rat trap bond masonry in reducing material usage, laterite stone masonry offers distinct advantages in terms of cost-effectiveness. This finding may be attributed to several factors unique to laterite stone, including its availability, affordability, and natural insulating properties, which contribute to reduced construction costs. Additionally, the larger size of laterite stones compared to bricks allows for savings on labor and other construction materials. Furthermore, the porous nature of laterite stone enhances its thermal insulation capabilities, reducing the need for additional insulation materials and resulting in long-term cost savings. Overall, the findings suggest that laterite stone masonry represents a cost-effective and sustainable choice for construction projects compared to traditional brick and rat trap bond masonry methods.

4.2. Roof slab

When comparing the cost of roof slabs for a span of 10m x 10m, three options are considered: regular slab, terracotta pots filler slab, and country tile filler slab. The regular slab is the conventional method of constructing a concrete roof slab, while the terracotta pots filler slab and country tile filler slab involve incorporating filler materials to reduce the amount of concrete required.

In the cost comparison, factors such as material costs, labor costs, and structural requirements are taken into account. The regular slab typically requires a significant amount of concrete, resulting in higher material and labor costs. On the other hand, the terracotta pots filler slab and country tile filler slab utilize filler materials such as terracotta pots or country tiles to reduce the amount of concrete needed, leading to cost savings.

Additionally, the structural performance of each option is considered to ensure that the roof slab meets safety standards and can withstand the intended loads. While the regular slab may offer the highest structural strength, the terracotta pot filler slab

COMPARATIVE ANALYSIS OF MASONRY WALL

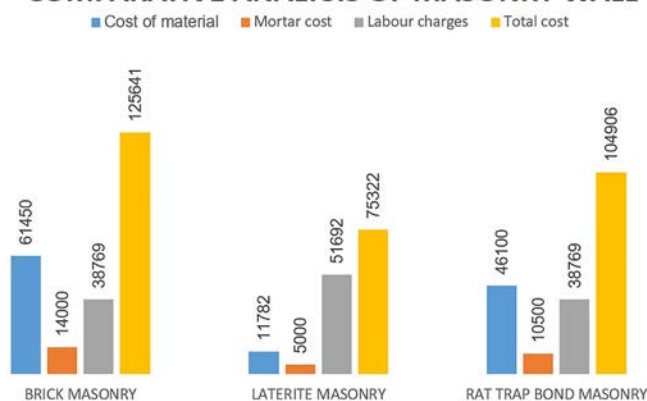


Figure 7. Comparative analysis of masonry walls.

and country tile filler slab can still provide adequate support for typical residential or low-rise commercial buildings.

Overall, the cost comparison between the regular slab, terracotta pots filler slab, and country tile filler slab for a span of 10m x 10m will depend on factors such as material availability, labor costs, and specific project requirements. However, incorporating filler materials in the slab construction process can offer cost-effective alternatives to traditional concrete slabs while maintaining structural integrity.

4.2.1. Estimation for conventional RCC roof slab

Estimating the materials required for a conventional RCC roof slab involves several components, including formwork, M20 grade concrete, and steel reinforcement, plastering, and painting. Here's a breakdown of each component:

Formwork: Formwork is the temporary structure used to support the concrete until it sets and gains sufficient strength. The quantity of formwork needed depends on the dimensions and shape of the roof slab.

M20 Concrete: M20 grade concrete refers to a mix of concrete with a characteristic compressive strength of 20 mega pascals (MPa) after 28 days of curing. The quantity of concrete required is calculated based on the dimensions (length, width, and thickness) of the roof slab.

Steel Reinforcement: Steel reinforcement, typically in the form of steel bars or mesh, is used to reinforce the concrete and enhance its tensile strength. The quantity of steel reinforcement required is determined based on the design specifications, including the spacing and diameter of the reinforcement bars.

Plastering: Plastering involves applying a coat of mortar to the surface of the roof slab to create a smooth and even finish. The quantity of plastering material required depends on the surface area of the roof slab and the desired thickness of the plaster.

Painting: Painting the roof slab is optional but can provide additional protection against weathering and

enhance its aesthetic appearance. The quantity of paint needed depends on the surface area to be painted and the number of coats desired.

By accurately estimating the quantity of each component required for the conventional RCC roof slab, construction planners can ensure efficient resource allocation, cost-effectiveness, and timely completion of the project.

Considering the roof measuring 10m x 10m for estimation, Table 2 (i) shows the calculation for the conventional RCC Roof Slab.

4.2.2. Estimation for filler slab roof (country tile filler)

Estimating the materials required for a filler slab roof with country tile filler involves several components, including formwork, plastered surface, M20 grade concrete, country tile filler, steel reinforcement, and weatherproof coating. Here's a breakdown of each component:

Formwork: Formwork is the temporary structure used to support the concrete until it sets and gains sufficient strength. The quantity of formwork needed depends on the dimensions and shape of the roof slab.

Plastered Surface: Before installing the country tile filler, the surface of the slab may need to be plastered to create a smooth and even base. The quantity of plastering material required depends on the surface area of the roof slab and the desired thickness of the plaster.

M20 Concrete: M20 grade concrete refers to a mix of concrete with a characteristic compressive strength of 20 mega pascals (MPa) after 28 days of curing. The quantity of concrete required is calculated based on the dimensions (length, width, and thickness) of the roof slab.

Country Tile Filler: The country tile filler is the primary material used to fill the voids in the slab, reducing the amount of concrete required. The quantity of country tile filler needed depends on the dimensions of the voids and the spacing between them.

Steel Reinforcement: Steel reinforcement, typically in the form of steel bars or mesh, is used to reinforce the con-

crete and enhance its tensile strength. The quantity of steel reinforcement required is determined based on the design specifications, including the spacing and diameter of the reinforcement bars.

Weatherproof Coating: Weatherproof coating is applied to the surface of the roof slab to protect it from moisture, UV radiation, and other environmental factors. The quantity of weatherproof coating needed depends on the surface area of the roof slab and the recommended application rate.

By accurately estimating the quantity of each component required for the filler slab roof with country tile filler, construction planners can ensure efficient resource allocation, cost-effectiveness, and the successful completion of the project.

Considering the roof measuring 10m x 10m for estimation, Table 2 (ii) shows the calculation for Country Tile filler slab.

4.2.3. Estimation for filler slab roof (terracotta pot filler)

Estimating the materials required for a filler slab roof with terracotta pot filler involves several components, including formwork, plastered surface, M20 grade concrete, terracotta pot filler, steel reinforcement, and weatherproof coating. Here's a breakdown of each components:

Formwork: Formwork is the temporary structure used to support the concrete until it sets and gains sufficient strength. The quantity of formwork needed depends on the dimensions and shape of the roof slab.

Plastered Surface: Before installing the terracotta pot filler, the surface of the slab may need to be plastered to create a smooth and even base. The quantity of plastering material required depends on the surface area of the roof slab and the desired thickness of the plaster.

M20 Concrete: M20 grade concrete refers to a mix of concrete with a characteristic compressive strength of 20 mega pascals (MPa) after 28 days of curing. The quantity of concrete required is calculated based on the dimensions (length, width, and thickness) of the roof slab.

Terracotta Pot Filler: The terracotta pot filler is the primary material used to fill the voids in the slab, reducing the amount of concrete required. The quantity of terracotta pot filler needed depends on the dimensions of the voids and the spacing between them.

Steel Reinforcement: Steel reinforcement, typically in the form of steel bars or mesh, is used to reinforce the concrete and enhance its tensile strength. The quantity of steel reinforcement required is determined based on the design specifications, including the spacing and diameter of the reinforcement bars.

Weatherproof Coating: Weatherproof coating is applied to the surface of the roof slab to protect it from moisture, UV radiation, and other environmental factors. The quantity of weatherproof coating needed depends on the surface area of the roof slab and the recommended application rate.

By accurately estimating the quantity of each component required for the filler slab roof with terracotta pot filler, construction planners can ensure efficient resource allocation, cost-effectiveness, and the successful completion of the project.

Considering the roof measuring 10m x 10m for estimation, the Table 2 (iii) shows the calculation for Terracotta Pot filler slab.

4.2.4. Inference

Based on the cost comparison between conventional RCC slab, terracotta pots filler slab, and country tile filler slab (Figure 8) for a span of 10m x 10m, it can be inferred that the filler slab options offer significant cost advantages over the conventional RCC slab.

The conventional RCC slab typically requires a substantial amount of concrete, resulting in higher material and labor costs. In contrast, both the terracotta pots filler slab and country tile filler slab utilize filler materials to reduce the amount of concrete needed, leading to cost savings.

Furthermore, the use of filler materials such as terracotta pots or country tiles can contribute to additional cost savings by reducing the need for formwork and steel reinforcement. These

Table 2. Estimation for (i) RCC slab, Filler Slab Roof - (ii) County Tile & (iii) Terracotta Pot filler.

i) ESTIMATION OF CONVENTIONAL RCC ROOF SLAB									
Sl. No	Description of work	Unit	Nos.	Length	Breadth	Depth	Quantity	Rate	Amount
1	Centring and shuttering for roof slab	Sft	1	32.80	32.80		1075.84	₹ 35.00	₹ 37,654.40
2	M20 Concrete for 6" thick roof slab	Cft	1	32.80	32.80	0.50	537.92	₹ 330.00	₹ 1,77,513.60
3	Steel reinforcement for roof beam, slab and concealed beams (Base rate-Rs. 70000 + Rs. 20000 Labor)	MT	1	1075.84		0.0018	1.94	₹ 90,000.00	₹ 1,74,286.08
4	Plastering work for RCC roof ceiling	Sft	1	32.80	32.80		1075.84	₹ 75.00	₹ 80,688.00
5	Painting for plastered ceiling	Sft	1	32.80	32.80		1075.84	₹ 35.00	₹ 37,654.40
Sub total									₹ 5,07,796.48 (\$ 5820.16)
Miscellaneous (5%)									₹ 25,389.82 (\$ 291.01)
Grand total									₹ 5,33,186.30 (\$ 6111.61)
ii) ESTIMATION OF COUNTY TILE FILLER SLAB									
Sl. No	Description of work	Unit	Nos.	Length	Breadth	Depth	Quantity	Rate	Amount
1	Centring and shuttering for roof slab	Sft	1	32.80	32.80		1075.84	₹ 35.00	₹ 37,654.40
2	2" thick profile making using soil and cement of ratio 1:10 with smooth plastered surface	Cft	1	32.80	32.80	0.17	182.89	₹ 180.00	₹ 32,920.70
3	Transportation and placing of filler material in place to design detail using cement mortar (Country tile - 1'0"x4"x3"; BR - Rs. 55/-)	Nos	72				72.00	₹ 165.00	₹ 11,880.00
4	M20 Concrete for 7" thick Filler slab (3" Filler + 4" concrete)								
a	Volume of M20 concrete required for 7" thick concrete slab	Cft	1	32.80	32.80	0.583	627.21		
b	Volume of country tile fillers (DEDUCTION)		72	0.111			7.99		
(a-b)	Total quantity of M20 concrete required for pot filler slab after deduction of pot filler volume	Cft	1				619.22	₹ 330.00	₹ 2,04,343.50
SLAB AREA (MT/Sft)									
5	Steel reinforcement for roof beams, slab and concealed beams (BR- Rs. 70,000 + Labour - Rs. 20,000)	MT	1	1075.840		0.0015	1.61	₹ 90,000.00	₹ 1,45,238.40
6	Weatherproof coating	Sft	1	32.80	32.80		1075.84	₹ 35.00	₹ 37,654.40
Sub total									₹ 4,69,691.40 (\$ 5383.41)
Miscellaneous (5%)									₹ 23,484.57 (\$ 269.17)
Grand total									₹ 4,93,175.97 (\$ 5652.58)
iii) ESTIMATION OF TERRACOTTA POT FILLER SLAB									
Sl. No	Description of work	Unit	Nos.	Length	Breadth	Depth	Quantity	Rate	Amount
1	Centring and shuttering for roof slab	Sft	1	32.80	32.80		1075.84	₹ 35.00	₹ 37,654.40
2	2" thick profile making using soil and cement of ratio 1:10 with smooth plastered surface	Cft	1	32.80	32.80	0.17	182.89	₹ 180.00	₹ 32,920.70
3	Transportation and placing of filler material in place to design detail using cement mortar (Terracotta pot- 9" dia x3"; BR - Rs. 140/-)	Nos	100				100.00	₹ 140.00	₹ 14,000.00
4	M20 Concrete for 7" thick Filler slab (3" Filler + 4" concrete)								
a	Volume of M20 concrete required for 7" thick concrete slab	Cft	1	32.80	32.80	0.583	627.21		
b	Volume of country tile fillers (DEDUCTION)		100	0.033			3.27		
(a-b)	Total quantity of M20 concrete required for pot filler slab after deduction of pot filler volume	Cft	1				623.94	₹ 330.00	₹ 2,05,901.76
SLAB AREA (MT/Sft)									
5	Steel reinforcement for roof beams, slab and concealed beams (BR- Rs. 70,000 + Labour - Rs. 20,000)	MT	1	1075.840		0.0015	1.61	₹ 90,000.00	₹ 1,45,238.40
6	Weatherproof coating	Sft	1	32.80	32.80		1075.84	₹ 25.00	₹ 26,896.00
Sub total									₹ 4,62,611.26 (\$ 5302.26)
Miscellaneous (5%)									₹ 23,130.56 (\$ 265.11)
Grand total									₹ 4,85,741.82 (\$ 5567.37)

filler materials are often more affordable than concrete and can be sourced locally, further lowering construction costs.

Overall, the inference drawn from the cost comparison is that filler slab options, such as terracotta pots filler slab and country tile filler slab, offer a cost-effective alternative to conventional RCC slabs for roof construction projects. By opting for filler slab solutions, construction projects can achieve significant cost savings while maintaining structural integrity and durability.

5. Conclusion

The comparative study of low-cost construction methods for affordable housing in India sheds light on the need to choose proper construction methods and materials that are cost-effective, perform well, and are sustainable. The analysis of filler slab systems, especially terracotta pot and country tile types, proves that the selection of the filler material greatly affects cost-effectiveness, structural weight, and thermal comfort. In parallel, the contrast between laterite stone masonry and rat trap bond masonry illustrates how construction efficiency, material properties, and regional availability influence the practicality and cost of alternative wall systems.

Notably, several of these methods are not only theoretically sound but are being incrementally implemented in different parts of India. Construction techniques like rat trap bond masonry and filler slabs have been favored by both government-majority housing programs as well as NGO-initiated

projects because of their material economy and adaptability to local conditions. In regions like Kerala, Karnataka, and parts of Maharashtra, building with laterite stone and terracotta fillers has become popular because of cultural acceptability, local source availability, and adaptability to climate.

End-user and project stakeholders' feedback indicates a positive overall view of these methods, most notably thermal comfort and aesthetics. People living in houses constructed using filler slabs have testified to less indoor heat and improved living comfort, with rat trap bond masonry having been valued for allowing room for inbuilt services such as plumbing and electrical lines. Still, there are challenges, especially concerning the shortage of skilled manpower trained in non-traditional construction and low awareness among housing boards and contractors, which at times slows down common usage.

For future research, it is suggested to conduct more comprehensive comparative analyses including various construction methods, accounting for region-specific factors like labor wages, transport expenses, and fluctuating prices of materials. Further, longitudinal analyses evaluating the long-term durability, maintenance requirements, and client satisfaction with these low-cost housing options would provide in-depth analysis of their sustainability and performance in real settings.

Ultimately, the integration of such construction practices requires not only technical endorsement but also strong policy support, capacity-building initiatives, and active social mobilization. Strengthening these dimensions can significantly enhance the living standards of economically weaker sections and advance India's vision of inclusive and sustainable urban development. These findings align with global policy frameworks that advocate sustainable urbanization as a key strategy for improving housing affordability, environmental performance, and social inclusion in developing cities (UN-Habitat, 2020).

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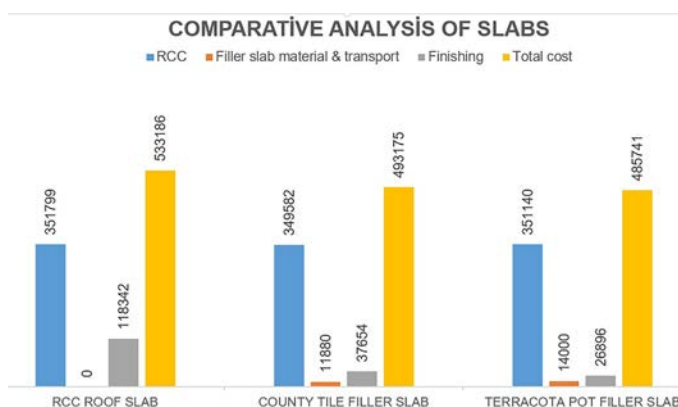


Figure 8. Comparative analysis of slabs.

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Integrated project delivery in the AEC sector: A four-step systematic literature review

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Abstract

Considering low productivity rates and insufficient collaboration within the AEC sector; some new methods like integrated project delivery (IPD) have been developed to enhance projects' life cycles. This search aims to examine 207 studies thoroughly by using the PRISMA Statement and present detailed descriptive statistics, the most common definitions, principles, benefits, and barriers of IPD. A comprehensive definition of IPD is provided, and the main and optional principles for IPD implementation are suggested. Another purpose of this research is to compile studies examined performance outcomes of IPD in 7 performance areas, as well as performance comparisons of IPD with traditional project delivery systems (PDSs). A systematic search was conducted in 2 extensive databases: Scopus and Web of Science (WoS). Bibliometrix and VOSviewer softwares are used in the analysis. According to the performance evaluations in the literature, IPD has no superiority over traditional PDSs concerning cost performance, and no significant differences in HSE performances are found. On the other hand, it is asserted in the literature that IPD has a slightly superior schedule performance over traditional PDSs, and IPD has superior performances in communication, quality, change management, and business areas compared to traditional PDSs.

Keywords

Bibliometric search, Integrated project delivery, Performance outcomes, Scientometric analysis, Systematic literature review.

1. Introduction

Academics and experts in the Architecture, Engineering, and Construction (AEC) sector have been looking for answers to the challenges faced within the sector. Following these investigations in the industry, various innovative methods, including lean management, along with emerging technologies like building information modeling (BIM), have been adopted in the AEC industry. However, there are still inadequacies in integrating new technologies and approaches into contract types, decreasing wastes, improving cooperation, and enhancing productivity. IPD offers an effective method to tackle the challenges that conventional project delivery systems present.

IPD provides several advantages, including enhanced collaboration, early stakeholder involvement, improved productivity, fewer conflicts, and better budget and time management (Durdyev et al., 2020; Sun et al., 2015). Its adoption has been on the rise in certain developed countries, effectively producing enhancements in various construction initiatives (Khemlani, 2009; Matthews & Howell, 2005). However, the practice of IPD remains limited globally, and there are obstacles to its implementation. Recently there has been much discussion about several obstacles to IPD implementation, like legal barriers, resistance to change, poor communication, and a lack of IPD experience among stakeholders (Kahvandi et al., 2018). As far as we are aware, there has been limited investigation into the context and degree of integration within the construction sector (Gomez et al., 2018). For this reason, systematic literature reviews are required to synthesize current research findings, identify research frontiers, and draw on future initiatives in relation to the construction sector.

On the basis of the evidence currently available, it seems fair to suggest that analysis of the advantages and promising sides of IPD is an encouraging field to research. To comprehend the current debate on IPD, we aimed to examine the existing research regarding the consequences of utilizing IPD as a delivery method. It was also aimed

to use a systematic review approach to review the IPD literature, provide descriptive statistics, review and classify definitions, principles, benefits, and barriers of IPD. This research aims to analyze and categorize prior studies by applying the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement, as well as to evaluate the performance outcomes of IPD. Considering the lack of industry-wide agreed-upon definition of IPD, a comprehensive definition of IPD is provided in this study. Moreover, the main principles of IPD, optional and accelerator principles for IPD implementation are suggested for practitioners and researchers.

This systematic review indicates that studies related to IPD are relatively recent, and there are a few articles related to IPD before 2000. Further, it can be said that the United States has the highest number of articles related to IPD, and IPD studies are insufficient in many countries, including Türkiye. Having no comprehensive study in the field of IPD is the main reason for the unfamiliarity of project stakeholders with such a project delivery system (PDS) in the construction sector (Bach, 2014).

As a result of analyzing performance outcomes of IPD in 7 performance areas, it can be concluded that IPD has no superiority over traditional PDSs concerning cost performance, however, IPD could provide a significant improvement in cost management at least by eliminating cost overruns. Moreover, IPD has a somewhat better performance in scheduling compared to conventional PDSs, and IPD outperforms traditional PDSs in communication area across all evaluations. In addition, most of the evaluations assert that IPD has superiority over traditional PDSs regarding quality performance, and all of the related evaluations indicate that IPD has superiority over traditional PDSs regarding change management performance. Additionally, IPD has positive and superior business performance in all of the related evaluations, and it is indicated that IPD provides increased market opportunities, fewer claims, pleased owner, long-term reliability. Lastly, there are only

4 evaluations regarding HSE (Health, Safety, and Environment) performance among 33 identified evaluations, and no significant differences in HSE performances are found.

This study examines the subsequent research questions:

- How are performance outcomes of IPD implementations in 7 performance areas (cost, time, quality, communication, change management, business, and HSE)?
- Which researches have been done explicitly on IPD in the AEC sector, and are the performance results obtained from IPD cases in the literature parallel with the projected advantages of IPD in the literature?
- What are the most common definitions, principles, benefits, and barriers of IPD?
- What are the descriptive statistics (years, authors, countries, etc.) of IPD studies?
- How is the collaboration among the authors and the countries?

2. Research method

This research involves a four-phase methodical literature evaluation that includes bibliometric search, scientometric analysis, comprehensive literature review, and discussion on performance outcomes of IPD. The

process of the systematic literature review is depicted in Figure 1. The systematic review approach of the PRISMA Statement is used in this study. The PRISMA Statement was developed to improve consistency and quality of systematic reviews (Moher et al., 2009), and it has a quite clear methodological approach (Shamseer et al., 2015). This approach is selected to strengthen the methodological quality and reliability of the review.

A methodical review of IPD studies was performed in June 2021 utilizing 2 extensive databases, Scopus and WoS. These databases hold a significant number of publications, including journals and books, and both are regarded as reputable sources in the scientific community. Bibliometric research approaches were used to analyze the layout and quality of performance outcomes of IPD research. The retrieved data was investigated by employing the software VOSviewer, the Online Analysis Platform of Literature Metrology (<http://bibliometric.com/>) and Bibliometrix, a freely available resource for quantitative research in scientometrics and bibliometrics, to examine and forecast the trends in this area. In the last two steps, a comprehensive literature review and discussion on performance outcomes of

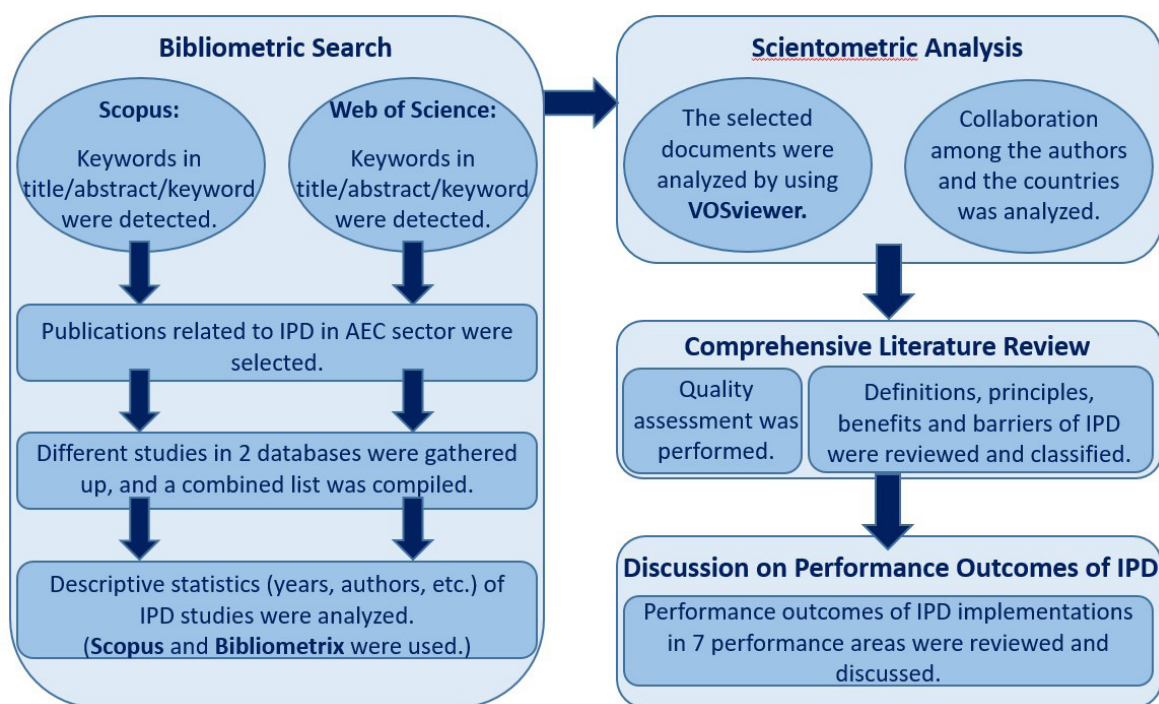


Figure 1. Workflow of the systematic literature review.

IPD implementation were performed after a quality assessment by using Scimago Journal Rank (SJR).

3. Bibliometric search

In the first step, the bibliometric search is performed in 4 phases: identification, screening, selecting and analysis.

3.1. Identification of studies

There is no industry-wide agreed-upon definition of IPD, and some principles of IPD, such as early involvement and collaborative engagement of stakeholders, have been used in the AEC sector in the name of relational contracting or alliancing. As a result, it was considered that relying on precise wording might lead to overlooking certain pertinent documents, so alternative phrasing was utilized in the query string to capture all publications associated with IPD. The keywords listed below were queried in the title, abstract, and keyword sections: integrated project delivery, integrated contract, integrated contracts, IPD, Pure IPD, multi-party contract, multi party contract, multi-party contracting, relational contracting, alliance contract, alliancing.

A systematic search was conducted in June 2021 by using the stated keywords in 2 databases, Scopus and WoS. Firstly, the specified keywords were explored in title/abstract/key-word fields in Scopus, and 1,074 studies were detected. Then, subject areas not related to the AEC sector such as biology, medicine, mathematics were excluded, and number of results was decreased to 431 in Scopus. Further, documents with undefined authors and source titles were excluded, and number of results was 416 in Scopus. Further, same procedure was followed in WoS, and 487 studies were detected in WoS database which differs in the interface and commands.

3.2. Screening of studies

A systematic review's eligibility screening step entails establishing criteria that assess which primary research studies uncovered during searches are pertinent for addressing the research questions (Frampton et

al., 2017). The criteria for inclusion in this study are determined by the Guidelines for Systematic Reviews in Environmental Management developed by the Collaboration for Environmental Evidence (CEE). Before beginning eligibility screening, duplicated publications that were common in search results were removed as a preliminary step. Furthermore, eligibility screening can be used to implement a variety of filters at these various phases of reading. According to CEE recommendations, at least two filters should be used: (a) a first reading of titles and abstracts to efficiently remove articles which are clearly irrelevant, and (b) assessment of the full-text version of the article (CEE, 2013).

Titles, abstracts, and introductions (also full-texts in necessary cases) of the publications in the searches were reviewed, and studies not related to IPD such as integrated product development and improved passive damping were removed from the data sets. Then, 184 out of 416 publications from Scopus database and 73 out of 487 publications from WoS database were found relevant. Further, 73 documents selected from WoS database were examined, and 12 publications were excluded due to being a book or a book series, and 38 publications were excluded due to existing in the data set of last search in Scopus. A flow diagram for the identification of studies was presented in Figure 2 by using PRISMA 2020 flow diagram provided by Page et al. in 2021.

3.3. Selection criteria

The criteria outlined below were employed in the selection of publications.

- There was no time constraint, and all related studies in the databases were considered to identify all relevant publications on the subjects related to IPD.
- Only articles were included in the search because their research methodologies could easily be examined. Other types of documents such as conference papers, books, reports were excluded because their quality and eligibility could

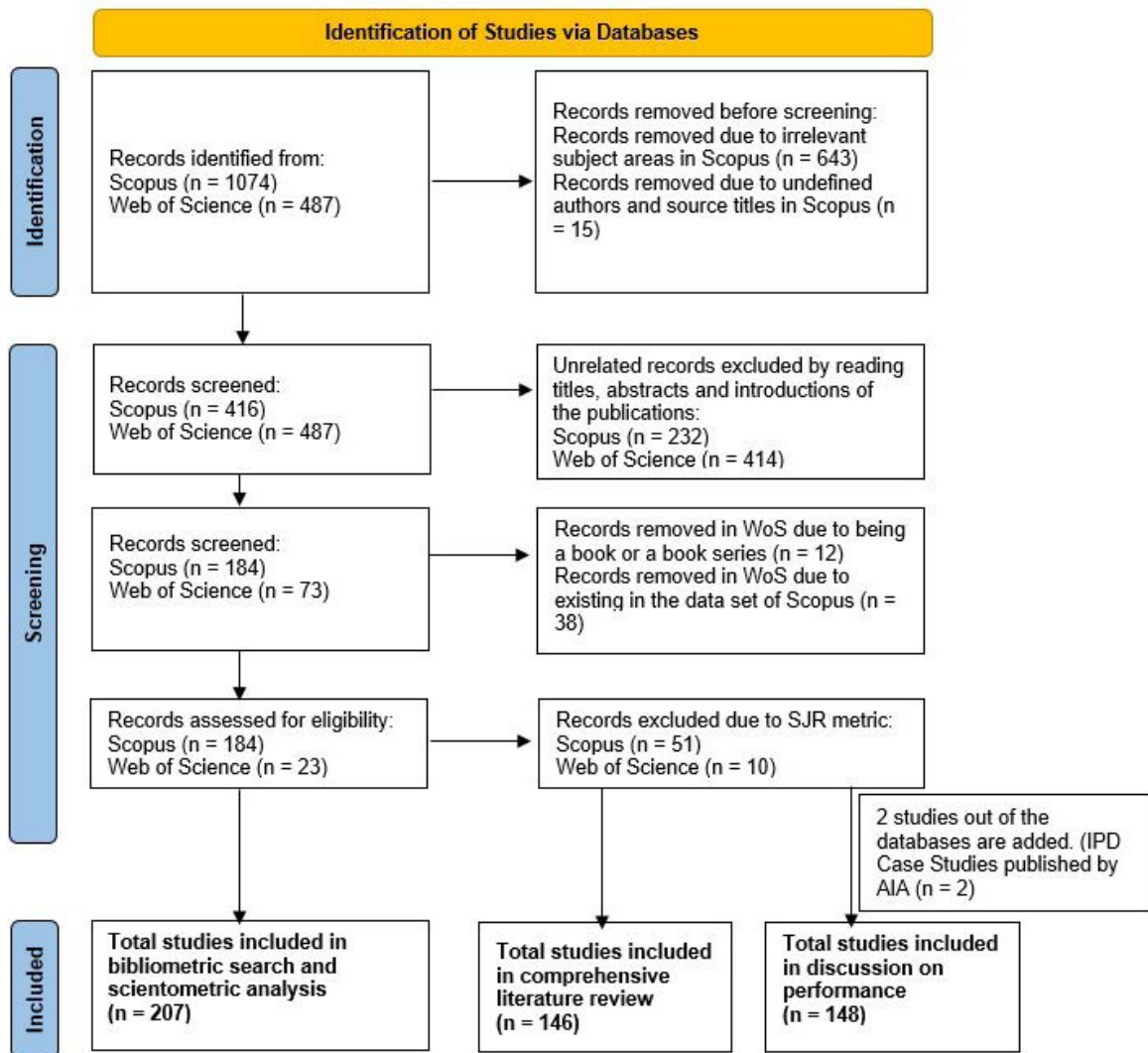


Figure 2. PRISMA flow diagram for identification of studies.

- not be measured effectively.
- Only studies in the subject areas of engineering, construction, architecture, business, management, and accounting were included. Subject areas not related to the AEC sector such as biology, medicine, mathematics were excluded. Moreover, publications with undefined subject areas were excluded.
- Documents with undefined authors and source titles were excluded because these publications could not be analyzed properly.
- Despite using the mentioned criteria in the searches, some irrelevant documents, which were not related with the determined keywords, were identified in the data sets by reading titles, abstracts, and introductions (also full-texts in necessary cases) of the publications.

These irrelevant documents were removed from the data sets.

3.4. Analysis and results

The analysis is done by using VOSviewer, R-based Bibliometrix and Scopus Analyst. This research employs various bibliometric metrics such as citation analysis, bibliographic coupling, and co-occurrence analysis to illustrate the development of IPD. The analysis begins with describing the main bibliometric statistics to gain a sense of the relative standing of the IPD in the AEC sector. It could be essential to emphasize that studies included in the bibliometric and scientometric analyzes were identified by using different wording such as integrated project delivery, integrated contract, integrated contracts, IPD, Pure IPD, multi-party contract,

multi party contract, multi-party contracting, relational contracting, alliance contract, alliancing.

The annual publication numbers and citation information of the different journals/authors were analyzed using the online bibliometric platform, Bibliometrix, and Biblioshiny application for Bibliometrix. The bibliographic statistics of 207 studies published in 62 different sources between 1975 and 2021 show that the average number of citations per article is 31.94, and per year per article is 3.272. The reviewed studies were published by a total of 426 authors, with 582 author appearances. The number of single-authored documents is 43, and these studies were published by 32 authors. Documents per author is 0.486, and the average number of co-authors per publication is 2.81, indicating that this field's articles are the outcome of collaborative research efforts.

The articles were also analyzed in terms of authors and citations, and there were 9 authors who have more than 4 articles related to IPD. During the reporting period, these authors contributed 64 papers, accounting for 30.92 percent of the total publications output with 2652 citations. The publication count revealed Ling, F. Y. Y. as the first in the list, with 11 publications and the highest h-index (11). For his 9 papers, Kumaraswamy, M. M. has the most citations (514). Lahdenpera, P. and Rahman, N. M. are the 3rd authors with the most publications (8), and Rahman, N. M. is the 2nd most cited author with 512 total citations. The authors' h-index measures both the productivity and citation impact of the publications of a scientist or scholar (Hirsch, 2005). The index derives from a collection of the scientist's most frequently cited works and the count of citations they have garnered in various other publications.

Articles related to IPD were also examined by year. The study identification process was completed on June 5-6, 2021, and publications after this date are not included in this study. During the first period (1975–2000), the total number of papers is 7, and the first article was published in 1975 by Warszawski, A. The period 2001–

2010 counts 53 papers. The last years (2011–2021) is the most productive period with 147 contributions. There are more than 10 articles per year after 2013, and 19 articles on topics related to IPD were published in 2020.

Based on the review regarding countries, United States has the highest number of articles (53), and these articles are at the forefront in supporting understanding IPD among the other countries. Australia was the 2nd country with the most publications in the field of IPD with 35 articles. United Kingdom was in third place with 27 publications. Only 1 article affiliated to Türkiye was detected that was performed by applying the explained criteria in two databases.

The top five journals preferred by researchers in the field of IPD are Journal of Construction Engineering and Management (23 publications), Journal of Construction Management and Economics (15), Lean Construction Journal (14), Journal of Engineering, Construction and Architectural Management (13), and International Journal of Project Management (11). During the reported period, Journal of Construction Management and Economics received 1687 citations, followed by Journal of Construction Engineering and Management which received 1439 citations. With the help of Bibliometrix R package, Journal of Construction Engineering and Management had the highest h-index (18), m-index (0.69), and g-index (23) values.

Clusters of keywords considered to be themes, whose density and centrality can be used to classify and map themes in a two-dimensional diagram. The KeyWords Plus field is used in the thematic map (Figure 3) that examines topics based on the quadrant in which they are positioned. The Keywords Plus field, unlike the authors' keywords, is normalized. The Keywords Plus terms can encapsulate the content of an article with enhanced depth and diversity (Della et al., 2021). The upper-right section illustrates the motor themes that are defined by significant centrality and density. The motor theme in this analysis is relational contracting. With regard to the upper-left quadrant, it

demonstrates high density themes but unimportant external links, which are highly developed and isolated themes (low centrality). In this quadrant, architectural design and BIM are nish themes. In the lower-left quadrant are themes that are either emerging or declining. In this analysis, the theme of contracts is emerging. It is interesting to note that one of the most recurring words associated with the theme of contracts is “industrial management”. Finally, the lower-right quadrant shows the themes that are basic and transversal. These themes address general issues that cut across the field’s various research areas. The themes that emerge in this area are project management and construction industry.

4. Scientometric analysis

In the next phase, the selected studies were evaluated using VOSviewer software (version 1.6.16), conducting analyses on co-authorship and keyword co-occurrence. VOSviewer is a widely used tool for science mapping that helps generate maps from network data and allows for the visualization of those maps (Van Eck & Waltman, 2019). The analysis employed a fractional counting approach, as the creators of VOSviewer recommended utilizing this methodology over the traditional full counting method (Van Eck & Waltman, 2014).

4.1. Scholars and collaborations

An analysis of co-authorship was performed to identify the topics related to IPD that the researchers focused on and their collaborative efforts. In this evaluation, the minimum required number of documents and the minimum citation count for an author were set to 1 and 0, respectively. As a result of this selection, 425 of 425 scholars met the requirement, and all of the authors were illustrated in Figure 4. Node and font sizes are proportional to the number of publications, and link thickness refers to the number of publications co-authored. Ling, F. Y. Y. is the most productive researcher in the identified field and has the strongest linkage, and Kumaraswamy, M. M. is the second author in strong collaboration with colleagues.

4.2. Keywords analysis

An analysis of co-occurrence for author keywords was performed to outline research themes and illustrate core content. The minimum frequency for a keyword was set to 1, and all 491 keywords fulfilled this criterion. Commonly used keywords are illustrated in Figure 5. The size of the nodes and fonts reflects the frequency of keyword usage, and most frequently used keywords are “integrated project delivery”, “relational contracting”, “collaboration”, “integrated project

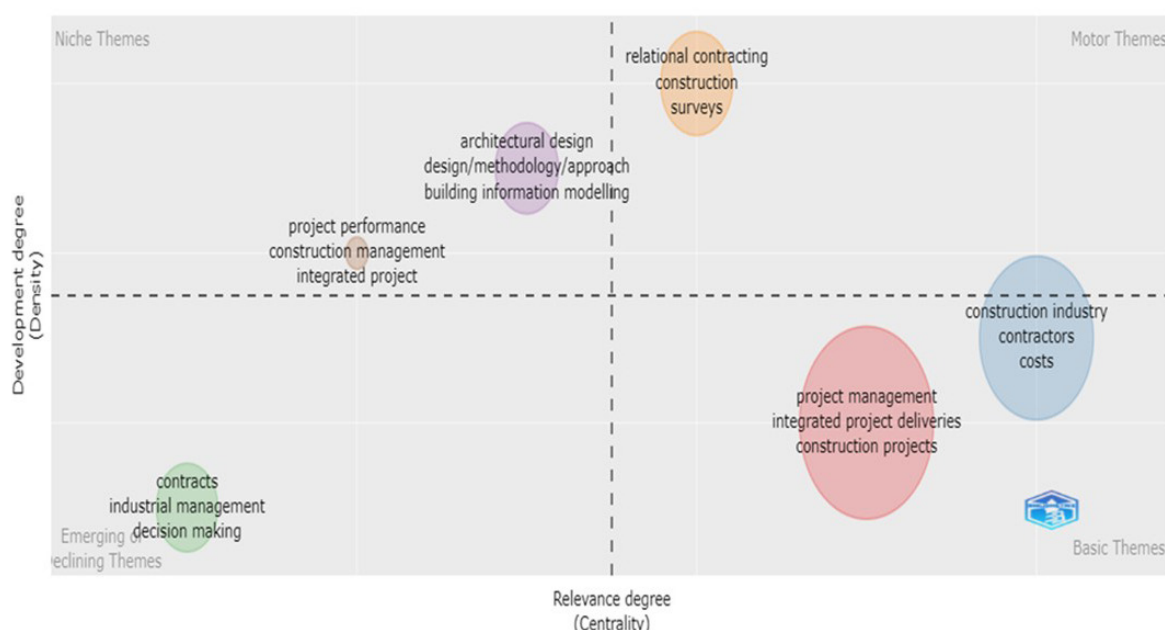


Figure 3. Thematic map.

and the records assessed for eligibility were subject to further assessment to ensure their quality. Studies excluded due to quality assessment were not included in this step and discussion on performance outcomes of IPD. The aim of this differentiation was that all relevant documents could be analyzed and classified in bibliometric and scientometric analyzes without any exclusion due to quality measurement, and IPD related issues and performance outcomes could be discussed by including only eligible studies.

5.1. Quality assessment

Quality assessment of publications is a complex and multi-dimensional process, and there are different approaches for quality measurement. The use of journal metrics is more proper because journal metrics are theoretically and statistically well founded and based on accurate and extensive data (Moed, 2005). All citations are considered equal in traditional citation analysis, and a citation from a widely read journal is accepted as strongly as one from a locally popular journal (Moed et al., 2012). There are some alternative metrics for quality assessment such as Scimago Journal Rank (SJR) and Source Normalized Impact per Paper (SNIP). SJR is a reputable metric inspired by Google's PageRank, whereby a journal's quality has a direct effect upon the value of the citations it gives to other journals (Gonzalez-Pereira, 2009). The approach used in SJR was found acceptable, and quality assessment was performed by using SJR metrics in this study.

There are four quartiles in SJR, Q1, Q2, Q3, and Q4, that classify journals according to their citation numbers and prestige. In this study, Q1 and Q2 quartiles, which include more cited and prestigious journals than other quartiles, were chosen as the standard for the quality assessment of the articles to be included in the last two steps of the study. 61 articles, 51 from Scopus and 10 from WoS, were excluded due to their inability to meet the required benchmark determined, and 146 studies were analyzed in the third step.

5.2. Definitions of IPD

There is no industry-wide agreed-upon definition of IPD, and 27 different definitions of IPD are determined in the literature as shown in Table 1. IPD definitions are still evolving; however, the most widely accepted definition is the first definition in Table 1, which was proposed by the American Institute of Architects (AIA) in 2007. Other project delivery systems such as collaborative Design Build (DB) or relational contracting could also be understood from the first definition. The second definition in Table 1 was presented by AIA in 2010, which more explicitly distinguishes between a traditional and IPD system.

Benefiting from the information obtained from this study and the existing definitions, IPD could be defined comprehensively as "a project delivery system that aims to integrate organizations, teams, systems, skills, technology, information, business interests, and focuses on optimizing project performances, reducing wastes, improving productivity, increasing value to the owner, increasing collaboration through multi-party contract, early involvement of stakeholders, risk and profit sharing, collaborative engagement of stakeholders, collaborative decision making, mutual respect and trust throughout project life cycles."

5.3. Principles / Characteristics of IPD

As a result of immature IPD structure and absence of single set of practices, principles or characteristics of IPD vary from source to source. 54 different IPD principles are identified in the literature as shown in Table 2. IPD principles published by AIA are the most commonly accepted and used principles in the industry. AIA defined nine IPD principles in 2007, and then AIA made alterations and defined six main IPD characteristics in 2010 as shown in Table 2. The following IPD characteristics were considered highly desirable by AIA in 2010: mutual respect and trust, collaborative innovation, intensified early planning, open communication, BIM used by multiple parties, lean

Table 1. The definitions of IPD in the literature.

Nu.	Definitions	Used Studies	Freq.
1	IPD is a project delivery approach that integrates people, systems, business structures, and practices into a process that collaboratively harnesses the talents and insights of all project participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication, and construction.	(Aapaoja et al., 2013; Choi et al., 2019; Elghaish et al., 2021; Ghassemi & Becerik-Gerber, 2011; Hall & Scott, 2019; Kent & Becerik-Gerber, 2010; Kraatz et al., 2014; Liu et al., 2021; Ma et al., 2017; Mei et al., 2017; Mesa et al., 2019; Othman & Youssef, 2020; Piroozfar et al., 2019; Rosayuru et al., 2019; Roy et al., 2018; Sun et al., 2015; Teng et al., 2019; Trach et al., 2020; Yu et al., 2019; Zhang, Huang, & Peng, 2018; Zhang et al., 2013)	21
2	IPD is a method of project delivery distinguished by a contractual arrangement among a minimum of owner, constructor, and design professional that aligns business interests of all parties.	(Azhar et al., 2015; Hanna, 2016; Ibrahim et al., 2020; Lahdenperä, 2012; Mesa et al., 2019; Sun et al., 2015)	6
3	IPD is a delivery system distinguished by a multiparty agreement and the very early involvement of key participants.	(Durdyev et al., 2020; El Asmar et al., 2016; El Asmar et al., 2013)	3
4	IPD is a business model for designing, executing and delivering the building through collaborative, integrated and productive techniques and project participants.	(Othman & Youssef, 2020)	1
5	IPD is an emerging project delivery approach aims to minimise waste in construction projects which leads to optimal improvement in schedule, cost and quality.	(Othman & Youssef, 2020)	1
6	IPD is a method that improves the project through integrating project team and binding continuous cooperation among project stakeholders.	(Jadidoleslami et al., 2019)	1
7	IPD is a contractual system for project delivery. It integrates project stakeholders throughout project life cycle.	(Kahvandi et al., 2018)	1
8	IPD includes presence of all key factors of the project from outset in an integrated manner, and using their experiences in a multilateral contract to have a successful project and participation in risk and reward for all stakeholders in project life cycle.	(Kahvandi et al., 2018)	1
9	IPD is widely regarded as a modern delivery method of construction projects that can provide the most effective and efficient way of procuring built assets.	(Durdyev et al., 2020)	1
10	IPD is a construction project contractual structure, promotes risk and profit sharing among project participants to resolve systemic problems of traditional contractual approach.	(Sun et al., 2015)	1
11	IPD is an approach that integrates people, systems, business structures and practices through a multi-party agreement to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design and construction.	(Mesa et al., 2019)	1
12	IPD is an approach to project delivery that incorporates people, a framework, business structures and practices into one system.	(Whang et al., 2019)	1
13	IPD is a business model for the integration of the design and construction stakeholders which is not tied to a specific contract type or technologies, but is rather a set of principles that can be applied to a range of circumstances.	(Kraatz et al., 2014)	1
14	IPD is a form of collaborative project delivery model designed to share the project resource pool, project decision-making rights, and the project outcome among multiple firms.	(Hall & Bonanomi, 2021)	1
15	IPD is an emerging delivery system in which members' success depends on collaboration and teamwork amongst main parties.	(Chang et al., 2017)	1
16	IPD is a relational construction delivery method in which the owner, designer and contractors are contractually bound to one another to perform/deliver projects as one team comprised of members that have agreed to put the interests of the "project as a whole" before their own interests.	(Singleton & Hamzeh, 2011)	1
17	IPD is a project delivery method that brings all stakeholders together for a common purpose and connects them with a contract.	(Bilge & Yaman, 2021)	1
18	IPD is a Relational Contracting approach that aligns project objectives with the interests of key participants. It creates an organization able to apply the principles and practices of the Lean Project Delivery System.	(Matthews & Howell, 2005)	1
19	IPD is an innovative project delivery method characterised by early, collaborative and collective engagement of key stakeholders across all phases of delivering a project.	(Elghaish et al., 2019)	1
20	IPD is a project delivery system using a multi party contract that has more than two parties selected by qualification based procurement, managed/shared risk, compensation based on team performance without GMP, and open book accounting.	(Cho & Ballard, 2011)	1
21	IPD may set all who believe there is a better way to deliver projects on a path to transform the status quo of fragmented processes yielding outcomes below expectations to a collaborative, value-based process delivering high-outcome results to the entire building team.	(Uihlein, 2016)	1
22	IPD is a new delivery mode that attempts to solve some problems in construction sector using a collaborative process to integrate people, systems, business structures, and practices to harness the knowledge and expertise of all participants involved in a project.	(Zhang et al., 2016)	1
23	IPD is an alternative design and construction contracting method for capital projects.	(Kelly & Ilzor, 2022)	1
24	IPD is a multiparty contract that includes contractual and behavioral elements.	(Laurent & Leicht, 2019)	1
25	IPD is a trust-based delivery method that achieves collaboration, with the stipulation that many aspects are related to the engagement of the owner.	(Laurent & Leicht, 2019)	1
26	IPD is a project delivery method that aims to optimize project performance by eliminating adversarial relationships and improving collaboration among project participants.	(Abdirad & Dossick, 2019)	1
27	IPD is a highly collaborative process that integrates the expertise of project teams during the early project stages.	(Ghassemi & Becerik-Gerber, 2011)	1

principles of design, construction and operations, co-location of teams, transparent financials.

In consequence of this comprehensive literature review, it could be asserted that green items in Table 2 (Nu. 1-10), which were the most frequently mentioned IPD principles by the researchers, should be the main principles of IPD. Yellow items in Table 2 (Nu. 11, 12, 14, 17, 18, and 19), which were mentioned by AIA and many researchers, could be option-

al and accelerator principles for IPD implementation in the AEC sector.

5.4. Benefits / Advantages of IPD

Numerous research efforts have highlighted the benefits or positive aspects of utilizing IPD. In this study, the benefits of IPD were reviewed elaborately, compiled, and put in order by frequency of occurrence. 44 different benefits of IPD are determined in the literature as shown in Table 3.

Table 2. The principles/characteristics of IPD in the literature.

Nu.	Principles / Characteristics	Mentioned Studies	Freq.	AIA 2007	AIA 2019	Legend
1	Risk/pain and reward/gain sharing	(Aapaaja et al., 2013; Abdird & Dossick, 2019; Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2019; Ballard et al., 2015; Bilge & Yaman, 2021; Chang et al., 2017; Chen et al., 2020; Cho & Ballard, 2011; Choi et al., 2019; Darrington, 2011; Durdyyev et al., 2020; El Asmar et al., 2013; Elghaish, Abrishami, & Hosseini, 2020; Elghaish, Abrishami, Hosseini, & Abu-Samra, 2020; Elghaish & Abrishami, 2021; Elghaish et al., 2021; Elghaish et al., 2019; Ghassemi & Becerik-Gerber, 2011; Hall & Bonanomi, 2021; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Johnson et al., 2013; Kahvandi et al., 2018; Kelly & Illozor, 2022; Kent & Becerik-Gerber, 2010; Kokkonen & Vaagaasar, 2018; Kraatz et al., 2014; Lahdenperä, 2012; Laurent & Leicht, 2019; Ma & Ma, 2017; Ma et al., 2017; Manata et al., 2018; Manata et al., 2021; Marinho et al., 2021; Matthews & Howell, 2005; Mei et al., 2017; Mesa et al., 2019; Nifa. F. A. A. et al., 2015; Othman & Youssef, 2020; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Roy et al., 2018; Salcedo Rahola & Straub, 2016; Singleton & Hamzeh, 2011; Teng et al., 2019; Trach et al., 2020; Uihlein, 2016; Whang et al., 2019; Yu et al., 2019; Zhang, Cao, & Wang, 2018; Zhang et al., 2020; Zhang et al., 2016)	57	✓	✓	Main IPD charact. defined by AIA
2	Early involvement/engagement of stakeholders	(Abdird & Dossick, 2019; Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; Bilge & Yaman, 2021; Chang et al., 2017; Cho & Ballard, 2011; Choi et al., 2019; Darrington, 2011; Durdyyev et al., 2020; El Asmar et al., 2016; El Asmar et al., 2013; Elghaish & Abrishami, 2020; Elghaish et al., 2021; Engeba et al., 2020; Ghassemi & Becerik-Gerber, 2011; Hall & Bonanomi, 2021; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Kahvandi et al., 2018; Kelly & Illozor, 2022; Kent & Becerik-Gerber, 2010; Kim & Dossick, 2011; Kokkonen & Vaagaasar, 2018; Kraatz et al., 2014; Lahdenperä, 2012; Laurent & Leicht, 2019; Liu et al., 2021; Ma & Ma, 2017; Ma et al., 2018; Manata et al., 2021; Marinho et al., 2021; Mei et al., 2017; Mesa et al., 2019; Nifa. F. A. A. et al., 2015; Nwajeli, 2021; Othman & Youssef, 2020; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Roy et al., 2018; Teng et al., 2019; Trach et al., 2020; Uihlein, 2016; Whang et al., 2019; Yu et al., 2019; Zhang, Huang, & Peng, 2018; Zhang, Cao, & Wang, 2018; Zhang et al., 2020; Zhang et al., 2016)	55	✓	✓	Considered as highly desirable IPD charact. by AIA
3	Multi-party contract	(Aapaaja et al., 2013; Abdird & Dossick, 2019; Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; Ballard et al., 2015; Chang et al., 2017; Cho & Ballard, 2011; Choi et al., 2019; Darrington, 2011; El Asmar et al., 2016; El Asmar et al., 2013; Elghaish & Abrishami, 2020; Elghaish et al., 2021; Engeba et al., 2020; Ghassemi & Becerik-Gerber, 2011; Hall & Bonanomi, 2021; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Johnson et al., 2013; Kahvandi et al., 2018; Kelly & Illozor, 2022; Kent & Becerik-Gerber, 2010; Kim & Dossick, 2011; Kokkonen & Vaagaasar, 2018; Lahdenperä, 2012; Laurent & Leicht, 2019; Liu et al., 2021; Ma & Ma, 2017; Marinho et al., 2021; Matthews & Howell, 2005; Mei et al., 2017; Mesa et al., 2019; Mesa et al., 2016; Nwajeli, 2021; Paik et al., 2017; Piroozfar et al., 2019; Roy et al., 2018; Salcedo Rahola & Straub, 2016; Sun et al., 2015; Teng et al., 2019; Trach et al., 2020; Uihlein, 2016; Whang et al., 2019; Yu et al., 2019; Zhang, Cao, & Wang, 2018; Zhang et al., 2020; Zhang et al., 2016)	48	✓		Main IPD charact. proposed in this study
4	Collaborative/collective engagement of stakeholders	(Abdird & Dossick, 2019; Ahmad et al., 2019; Azhar et al., 2015; Bilge & Yaman, 2021; Chang et al., 2017; Chen et al., 2020; Choi et al., 2019; Darrington, 2011; Durdyyev et al., 2020; Elghaish, Abrishami, Hosseini, & Abu-Samra, 2020; Elghaish & Abrishami, 2021; Elghaish & Abrishami, 2020; Elghaish et al., 2021; Ghassemi & Becerik-Gerber, 2011; Hall & Bonanomi, 2021; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Kahvandi et al., 2018; Kelly & Illozor, 2022; Kim & Dossick, 2011; Kraatz et al., 2014; Lahdenperä, 2012; Laurent & Leicht, 2019; Liu et al., 2021; Ma & Ma, 2017; Ma et al., 2018; Manata et al., 2021; Marinho et al., 2021; Mei et al., 2017; Mesa et al., 2019; Mesa et al., 2016; Nifa. F. A. A. et al., 2015; Nwajeli, 2021; Othman & Youssef, 2020; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Roy et al., 2018; Teng et al., 2019; Trach et al., 2020; Uihlein, 2016; Whang et al., 2019; Yu et al., 2019; Zhang, Huang, & Peng, 2018; Zhang, Cao, & Wang, 2018; Zhang et al., 2020; Zhang et al., 2016)	47	✓	✓	Optional and accelerator IPD charact. proposed in this study
5	Collaborative decision making and control (each participant's contribution)	(Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; Chang et al., 2017; Cho & Ballard, 2011; Choi et al., 2019; Ghassemi & Becerik-Gerber, 2011; Hall & Bonanomi, 2021; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Johnson et al., 2013; Kahvandi et al., 2018; Kokkonen & Vaagaasar, 2018; Kraatz et al., 2014; Lahdenperä, 2012; Laurent & Leicht, 2019; Ma & Ma, 2017; Ma et al., 2018; Manata et al., 2021; Marinho et al., 2021; Mei et al., 2017; Mesa et al., 2019; Mesa et al., 2016; Nifa. F. A. A. et al., 2015; Othman & Youssef, 2020; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Singleton & Hamzeh, 2011; Trach et al., 2020; Uihlein, 2016; Whang et al., 2019; Yu et al., 2019; Zhang, Huang, & Peng, 2018; Zhang, Cao, & Wang, 2018; Zhang et al., 2020)	38	✓	✓	
6	Mutual respect and trust	(Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; Chang et al., 2017; Durdyyev et al., 2020; Elghaish, Abrishami, & Hosseini, 2020; Ghassemi & Becerik-Gerber, 2011; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Kahvandi et al., 2018; Lahdenperä, 2012; Liu et al., 2021; Ma & Ma, 2017; Ma et al., 2017; Manata et al., 2021; Marinho et al., 2021; Mei et al., 2017; Mesa et al., 2019; Mesa et al., 2016; Nifa. F. A. A. et al., 2015; Othman & Youssef, 2020; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Singleton & Hamzeh, 2011; Uihlein, 2016; Whang et al., 2019; Yu et al., 2019; Zhang, Huang, & Peng, 2018; Zhang et al., 2020; Zhang et al., 2016)	31	✓	✓	
7	Appropriate technology (BIM, VDC, blockchain, etc.)	(Aapaaja et al., 2013; Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; Bilge & Yaman, 2021; Chang et al., 2017; Elghaish, Abrishami, & Hosseini, 2020; Elghaish, Abrishami, Hosseini, & Abu-Samra, 2020; Elghaish & Abrishami, 2021; Elghaish et al., 2021; Kelly & Illozor, 2022; Kim & Dossick, 2011; Kraatz et al., 2014; Lahdenperä, 2012; Laurent & Leicht, 2019; Ma & Ma, 2017; Ma et al., 2017; Marinho et al., 2021; Mei et al., 2017; Mesa et al., 2019; Nifa. F. A. A. et al., 2015; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Whang et al., 2019; Yu et al., 2019; Zhang, Huang, & Peng, 2018; Zhang, Cao, & Wang, 2018; Zhang et al., 2020)	28	✓	✓	
8	Open/effective communications	(Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; Chang et al., 2017; Ghassemi & Becerik-Gerber, 2011; Hanna, 2016; Jaddoleslami et al., 2019; Kahvandi et al., 2018; Kraatz et al., 2014; Lahdenperä, 2012; Ma & Ma, 2017; Ma et al., 2017; Marinho et al., 2021; Mesa et al., 2019; Nifa. F. A. A. et al., 2015; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Uihlein, 2016; Whang et al., 2019; Yu et al., 2019; Zhang, Huang, & Peng, 2018; Zhang, Cao, & Wang, 2018; Zhang et al., 2020; Zhang et al., 2016)	25	✓	✓	
9	Jointly developed and validated project goals	(Abdird & Dossick, 2019; Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; Chang et al., 2017; Cho & Ballard, 2011; El Asmar et al., 2013; Ghassemi & Becerik-Gerber, 2011; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Kahvandi et al., 2018; Lahdenperä, 2012; Ma & Ma, 2017; Manata et al., 2021; Mei et al., 2017; Mesa et al., 2019; Othman & Youssef, 2020; Singleton & Hamzeh, 2011; Trach et al., 2020; Uihlein, 2016; Yu et al., 2019; Zhang et al., 2020)	23	✓	✓	
10	Liability waivers among participants (ignoring claims/accepting risks at the beginning)	(Abdird & Dossick, 2019; Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; Chang et al., 2017; Cho & Ballard, 2011; El Asmar et al., 2013; Ghassemi & Becerik-Gerber, 2011; Hall & Bonanomi, 2021; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Johnson et al., 2013; Kahvandi et al., 2018; Lahdenperä, 2012; Ma & Ma, 2017; Mesa et al., 2019; Yu et al., 2019; Zhang et al., 2020)	19	✓	✓	
11	Open pricing techniques and fiscal transparency among participants	(Ahmad et al., 2019; Andary et al., 2020; Chang et al., 2017; El Asmar et al., 2013; Elghaish, Abrishami, Hosseini, & Abu-Samra, 2020; Elghaish & Abrishami, 2021; Hall & Bonanomi, 2021; Hall & Scott, 2019; Hanna, 2016; Jaddoleslami et al., 2019; Kokkonen & Vaagaasar, 2018; Kraatz et al., 2014; Lahdenperä, 2012; Laurent & Leicht, 2019; Ma & Ma, 2017; Mesa et al., 2019; Paik et al., 2017; Yu et al., 2019)	18	✓	✓	
12	Early and careful planning	(Andary et al., 2020; Azhar et al., 2015; Chang et al., 2017; Hall & Scott, 2019; Hanna, 2016; Kahvandi et al., 2018; Lahdenperä, 2012; Ma & Ma, 2017; Ma et al., 2017; Marinho et al., 2021; Mesa et al., 2019; Piroozfar et al., 2019; Rosayuru et al., 2019; Yu et al., 2019)	14	✓	✓	
13	Target value design	(Ballard et al., 2015; Darrington, 2011; Elghaish, Abrishami, Hosseini, & Abu-Samra, 2020; Elghaish & Abrishami, 2021; Elghaish & Abrishami, 2020; Hall & Bonanomi, 2021; Johnson et al., 2013; Laurent & Leicht, 2019; Ma & Ma, 2017; Ma et al., 2018; Mesa et al., 2019; Mesa et al., 2016; Singleton & Hamzeh, 2011; Sun et al., 2015)	14	✓	✓	
14	Lean construction principles	(Aapaaja et al., 2013; Ahmad et al., 2019; Andary et al., 2020; Chang et al., 2017; Darrington, 2011; Hall & Bonanomi, 2021; Hall & Scott, 2019; Kim & Dossick, 2011; Lahdenperä, 2012; Laurent & Leicht, 2019; Ma & Ma, 2017; Mesa et al., 2019; Rosayuru et al., 2019; Singleton & Hamzeh, 2011)	14	✓	✓	
15	Sharing information	(Chang et al., 2017; Elghaish, Abrishami, Hosseini, & Abu-Samra, 2020; Elghaish et al., 2019; Hall & Scott, 2019; Kahvandi et al., 2018; Ma & Ma, 2017; Mesa et al., 2019; Paik et al., 2017; Piroozfar et al., 2019; Uihlein, 2016; Whang et al., 2019; Yu et al., 2019; Zhang et al., 2020)	13	✓	✓	
16	The aim of optimizing the entire project as opposed to seeking the self-interest of their respective organizations (common interests)	(Elghaish, Abrishami, & Hosseini, 2020; Jaddoleslami et al., 2019; Kim & Dossick, 2011; Ma et al., 2018; Marinho et al., 2021; Paik et al., 2017; Piroozfar et al., 2019; Roy et al., 2018; Teng et al., 2019; Zhang et al., 2020; Zhang et al., 2016)	11	✓	✓	
17	Organization and leadership	(Andary et al., 2020; Azhar et al., 2015; Darrington, 2011; Kim & Dossick, 2011; Ma & Ma, 2017; Ma et al., 2017; Marinho et al., 2021; Nifa. F. A. A. et al., 2015; Piroozfar et al., 2019; Rosayuru et al., 2019; Yu et al., 2019)	11	✓	✓	
18	Co-location of teams	(Andary et al., 2020; Chang et al., 2017; Elghaish, Abrishami, Hosseini, & Abu-Samra, 2020; Hall & Scott, 2019; Kokkonen & Vaagaasar, 2018; Lahdenperä, 2012; Ma & Ma, 2017; Mesa et al., 2019; Zhang et al., 2020)	9	✓	✓	
19	Early goal definition	(Andary et al., 2020; Azhar et al., 2015; Ma et al., 2017; Marinho et al., 2021; Nifa. F. A. A. et al., 2015; Piroozfar et al., 2019; Yu et al., 2019)	7	✓	✓	
20	Intensified design	(Ahmad et al., 2019; Hanna, 2016; Lahdenperä, 2012; Mesa et al., 2019; Paik et al., 2017; Piroozfar et al., 2019; Yu et al., 2019)	7	✓	✓	
21	Relational contracts	(Andary et al., 2020; Kim & Dossick, 2011; Ma & Ma, 2017; Manata et al., 2021; Matthews & Howell, 2005; Roy et al., 2018; Zhang et al., 2020)	7	✓	✓	
22	Integrated group building, integrated team	(Aapaaja et al., 2013; Andary et al., 2020; Chang et al., 2017; Choi et al., 2019; Kelly & Illozor, 2022; Singleton & Hamzeh, 2011)	6	✓	✓	
23	Clearly defined team responsibilities	(Hall & Bonanomi, 2021; Kahvandi et al., 2018; Othman & Youssef, 2020; Yu et al., 2019)	4	✓	✓	
24	Key participants bound together as equals	(Ahmad et al., 2019; Andary et al., 2020; Hanna, 2016; Lahdenperä, 2012)	4	✓	✓	
25	Joint project control	(Abdird & Dossick, 2019; Elghaish et al., 2019; Hall & Scott, 2019; Singleton & Hamzeh, 2011)	4	✓	✓	
26	Encouragement for innovative ideas	(Lahdenperä, 2012; Mesa et al., 2019; Othman & Youssef, 2020; Paik et al., 2017)	4	✓	✓	
27	Alignment of goals with the client's desired outcomes	(Piroozfar et al., 2019; Singleton & Hamzeh, 2011; Yu et al., 2019)	3	✓	✓	
28	Dispute resolution procedures in the contract	(Hall & Bonanomi, 2021; Johnson et al., 2013; Rosayuru et al., 2019)	3	✓	✓	
29	Continuous improvement	(Johnson et al., 2013; Rosayuru et al., 2019; Singleton & Hamzeh, 2011)	3	✓	✓	
30	Award fees, performance evaluation	(Andary et al., 2020; Rosayuru et al., 2019; Singleton & Hamzeh, 2011)	3	✓	✓	
31	Early identification of risk	(Laurent & Leicht, 2019; Ma & Ma, 2017; Rosayuru et al., 2019)	3	✓	✓	
32	Allocation of parties' profits at the end of project	(Elghaish, Abrishami, & Hosseini, 2020; Elghaish & Abrishami, 2021)	2	✓	✓	
33	Legal relationships (consistent with public law requirements)	(Ma & Ma, 2017; Rosayuru et al., 2019)	2	✓	✓	
34	Equal commitment of main participants	(Jaddoleslami et al., 2019; Mesa et al., 2019)	2	✓	✓	
35	Data collection	(Kahvandi et al., 2018; Piroozfar et al., 2019)	2	✓	✓	
36	Transparent and intensified relations	(Kahvandi et al., 2018; Ma & Ma, 2017)	2	✓	✓	
37	Full-time and high performing staffing	(Chang et al., 2017; Singleton & Hamzeh, 2011)	2	✓	✓	
38	Integrated project insurance	(Chang et al., 2017; Rosayuru et al., 2019)	2	✓	✓	
39	No-blame culture	(Othman & Youssef, 2020)	1	✓	✓	
40	Common creativities	(Kahvandi et al., 2018)	1	✓	✓	
41	Communication contract	(Kahvandi et al., 2018)	1	✓	✓	
42	Collaborative review of the contract	(Yu et al., 2019)	1	✓	✓	
43	Quick decisions by the client	(Yu et al., 2019)	1	✓	✓	
44	Metric-based decisions	(Ma & Ma, 2017)	1	✓	✓	
45	Nested management levels	(Hall & Bonanomi, 2021)	1	✓	✓	
46	Replacing the tender stage by the buyout stage	(Elghaish, Abrishami, & Hosseini, 2020)	1	✓	✓	
47	Qualification-based selection	(Laurent & Leicht, 2019)	1	✓	✓	
48	Pioneering role of the client/owner	(Rosayuru et al., 2019)	1	✓	✓	
49	Whole life value assessment	(Rosayuru et al., 2019)	1	✓	✓	
50	Separate project bank account for each project	(Rosayuru et al., 2019)	1	✓	✓	
51	Safety plan and project labour agreement	(Rosayuru et al., 2019)	1	✓	✓	
52	Clarity of management decisions	(Rosayuru et al., 2019)	1	✓	✓	
53	Positive attitude of the project participants	(Rosayuru et al., 2019)	1	✓	✓	
54	Professional ethics	(Rosayuru et al., 2019)	1	✓	✓	

Table 3. *The benefits/advantages of IPD in the literature.*

Nu.	Benefits / Advantages	Mentioned Studies	Freq.
1	Shorter schedules	(Ahmad et al., 2019; Andary et al., 2020; Durdyyev et al., 2020; El Asmar et al., 2016; Elghaish & Abrishami, 2020; Elghaish et al., 2021; Johnson et al., 2013; Kelly & Illozor, 2022; Kent & Becerik-Gerber, 2010; Ma et al., 2018; Ma et al., 2017; Mesa et al., 2016; Othman & Youssef, 2020; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Schroeder, 2014; Singleton & Hamzeh, 2011; Yu et al., 2019; Zhang et al., 2020)	20
2	Increased cost savings	(Ahmad et al., 2019; Andary et al., 2020; Durdyyev et al., 2020; El Asmar et al., 2013; Ghassemi & Becerik-Gerber, 2011; Kahvandi et al., 2018; Kelly & Illozor, 2022; Kent & Becerik-Gerber, 2010; Ma et al., 2018; Matthews & Howell, 2005; Mesa et al., 2016; Othman & Youssef, 2020; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Singleton & Hamzeh, 2011; Teng et al., 2019; Yu et al., 2019; Zhang, Huang, & Peng, 2018; Zhang et al., 2020)	20
3	Increased efficiency / Improved productivity	(Andary et al., 2020; Durdyyev et al., 2020; Elghaish et al., 2019; Hall & Bonanomi, 2021; Hanna, 2016; Kent & Becerik-Gerber, 2010; Mei et al., 2017; Othman & Youssef, 2020; Piroozfar et al., 2019; Rosayuru et al., 2019; Rowlinson, 2017; Schroeder, 2014; Sun et al., 2015; Uihlein, 2016; Zhang et al., 2020)	15
4	Increased cooperation/collaboration, better relationships	(Andary et al., 2020; Choi et al., 2019; Durdyyev et al., 2020; Hall & Bonanomi, 2021; Harper et al., 2016; Kahvandi et al., 2018; Kent & Becerik-Gerber, 2010; Matthews & Howell, 2005; Nifa. F. A. A. et al., 2015; Paik et al., 2017; Piroozfar et al., 2019; Rosayuru et al., 2019; Schroeder, 2014; Sun et al., 2015; Uihlein, 2016)	15
5	Enhancing the quality of communications and trust	(Ahmad et al., 2019; Azhar et al., 2015; Bilge & Yaman, 2021; Durdyyev et al., 2020; El Asmar et al., 2016; Manata et al., 2018; Marinho et al., 2021; Matthews & Howell, 2005; Mesa et al., 2016; Piroozfar et al., 2019; Sun et al., 2015; Yu et al., 2019; Zhang et al., 2020)	13
6	Reducing wastes	(Andary et al., 2020; Durdyyev et al., 2020; Elghaish & Abrishami, 2020; Elghaish et al., 2021; Hall & Bonanomi, 2021; Hanna, 2016; Kent & Becerik-Gerber, 2010; Laurent & Leicht, 2019; Liu et al., 2021; Marinho et al., 2021; Piroozfar et al., 2019; Rosayuru et al., 2019; Zhang et al., 2020)	13
7	Better quality	(Ahmad et al., 2019; Andary et al., 2020; Azhar et al., 2015; El Asmar et al., 2016; Kelly & Illozor, 2022; Kent & Becerik-Gerber, 2010; Ma et al., 2017; Mesa et al., 2016; Othman & Youssef, 2020; Paik et al., 2017; Rosayuru et al., 2019; Singleton & Hamzeh, 2011)	12
8	Reduced errors and duplications	(Andary et al., 2020; El Asmar et al., 2013; Elghaish et al., 2019; Jadidoleslami et al., 2019; Kent & Becerik-Gerber, 2010; Mei et al., 2017; Rosayuru et al., 2019; Yu et al., 2019; Zhang et al., 2020)	9
9	Increased value to the owner	(Andary et al., 2020; El Asmar et al., 2013; Elghaish et al., 2021; Hanna, 2016; Kelly & Illozor, 2022; Laurent & Leicht, 2019; Liu et al., 2021; Marinho et al., 2021)	8
10	Assisting in const. greener build. (higher environ. sustainability)	(Azhar et al., 2015; Durdyyev et al., 2020; Johnson et al., 2013; Mei et al., 2017; Nifa. F. A. A. et al., 2015; Rosayuru et al., 2019; Sun et al., 2015; Teng et al., 2019)	8
11	Fewer change orders	(Ahmad et al., 2019; Andary et al., 2020; Kent & Becerik-Gerber, 2010; Ma et al., 2018; Ma et al., 2017; Othman & Youssef, 2020; Yu et al., 2019)	7
12	Reduced conflicts/disputes	(Andary et al., 2020; Azhar et al., 2015; Jadidoleslami et al., 2019; Mesa et al., 2016; Rosayuru et al., 2019; Sun et al., 2015)	6
13	Client satisfaction	(Ahmad et al., 2019; Durdyyev et al., 2020; Hall & Scott, 2019; Mesa et al., 2016; Rosayuru et al., 2019; Yu et al., 2019)	6
14	Increased reward/profit	(Ahmad et al., 2019; Azhar et al., 2015; Johnson et al., 2013; Mesa et al., 2016; Rosayuru et al., 2019; Zhang, Huang, & Peng, 2018)	6
15	Having potential for eliminating the barriers of BIM implem.	(Chang et al., 2017; Elghaish et al., 2019; Kent & Becerik-Gerber, 2010; Marinho et al., 2021; Piroozfar et al., 2019; Zhang et al., 2020)	6
16	Having potential for integration with innovative applications	(Durdyyev et al., 2020; Kraatz et al., 2014; Laurent & Leicht, 2019; Piroozfar et al., 2019; Rosayuru et al., 2019)	5
17	Fewer requests for information (RFIs)	(Andary et al., 2020; Hanna, 2016; Kent & Becerik-Gerber, 2010; Ma et al., 2018)	4
18	Management of change	(Kent & Becerik-Gerber, 2010; Rosayuru et al., 2019; Yu et al., 2019; Zhang et al., 2020)	4
19	Better planning	(Elghaish & Abrishami, 2020; Elghaish et al., 2021; Kent & Becerik-Gerber, 2010)	3
20	Fewer injuries (improvement in safety)	(Ahmad et al., 2019; Kent & Becerik-Gerber, 2010; Othman & Youssef, 2020)	3
21	Improved constructability	(El Asmar et al., 2013; Jadidoleslami et al., 2019; Rosayuru et al., 2019)	3
22	Better design quality	(Johnson et al., 2013; Rosayuru et al., 2019; Uihlein, 2016)	3
23	Improved working environment	(Laurent & Leicht, 2019; Nifa. F. A. A. et al., 2015; Rosayuru et al., 2019)	3
24	Reduced operations and maintenance costs	(Kent & Becerik-Gerber, 2010; Piroozfar et al., 2019)	2
25	Reduced design effort	(Andary et al., 2020; Othman & Youssef, 2020)	2
26	Better energy risk management	(Durdyyev et al., 2020; Kahvandi et al., 2018)	2
27	Increased potential for return business	(El Asmar et al., 2016; Hanna, 2016)	2
28	Less construction administration	(Kent & Becerik-Gerber, 2010; Othman & Youssef, 2020)	2
29	Enhanced cost and schedule predictability	(Ahmad et al., 2019; Azhar et al., 2015)	2
30	More prefabricated materials	(Kent & Becerik-Gerber, 2010; Othman & Youssef, 2020)	2
31	Increased control and supervision of project managers	(Kahvandi et al., 2018)	1
32	Shorter change order processing time	(Hanna, 2016)	1
33	Positive impact on company image	(Hanna, 2016)	1
34	Collective backup capabilities	(Whang et al., 2019)	1
35	Problem-area identification	(Whang et al., 2019)	1
36	Reduced owner's supervision cost of rent-seeking activities	(Mei et al., 2017)	1
37	Improved owner's supervision efficiency of rent-seeking activit.	(Mei et al., 2017)	1
38	Standardization in industry	(Rosayuru et al., 2019)	1
39	Increase in accuracy and speed of information	(Rosayuru et al., 2019)	1
40	Resource optimization	(Rosayuru et al., 2019)	1
41	Enhancing improvements in society, increasing living standards	(Rosayuru et al., 2019)	1
42	Less risky project overall	(Ghassemi & Becerik-Gerber, 2011)	1
43	Less stress and friction	(Kent & Becerik-Gerber, 2010)	1
44	More enjoyable projects	(Kent & Becerik-Gerber, 2010)	1

5.5. Barriers / Constraints to IPD implementation

The AEC sector faces significant barriers in IPD implementation, and there are some inhibitors to widespread IPD use. The most common barriers must be eliminated to facilitate a faster transition to IPD. Some studies have investigated barriers to IPD implementation, and this study will contribute to the literature by compiling barriers or constraints, putting barriers in order by frequency of occurrence, and highlighting the critical issues.

Identified barriers were classified into 6 groups which are contractual/legal, behavioral/cultural, administrative/managerial/procedural, organizational/qualitative, financial, and technological. Barriers mentioned more than twice in the literature are shown with colored lines in Table 4 to highlight the most common issues in the AEC sector.

5.6. Research methods used in studies related to IPD

Research methods used in 146 studies related to IPD were also analyzed, and 14 different research methods were identified. The total number of methods is evaluated as 257 because more than one method is used in some studies. The most commonly used research method in the selected IPD researches was case study/case study review with a rate of 25.29%, and it was followed by literature review with a rate of 19.84%. The remaining methods were survey/Delphi questionnaires (17.51%), interviews (15.95%), a framework/a model (14.79%), regression analysis (1.56%), partial least squares structural equation modelling (1.56%), fuzzy set theory (0.78%), simulation (0.78%), fuzzy cognitive mapping technique (0.39%), evolutionary game model (0.39%), conceptualization (0.39%), cooperative game theory (0.39%), and system dynamics approach (0.39%).

6. Discussion on performance outcomes of IPD

Bibliometric data can offer the insights required to assess the performance of a particular field within the

literature. Moreover, the findings from bibliometric analysis can identify the key factors that enhance contributions within a particular area of research and guide scholars toward carrying out more impactful studies. In the process of conducting this systematic review, particular attention was paid to performance outcomes of the projects that used IPD or IPD principles as well as performance comparisons of IPD with traditional PDSs.

In addition to 146 eligible studies determined by applying the explained criteria and quality assessment, IPD case studies published by AIA California Council in 2010 and by the University of Minnesota in 2012 are also included in the review of performance outcomes. The findings of this current research show that there are limited studies examining performance outcomes of IPD, and only 33 performance evaluations for IPD are identified among these studies. It is observed that most of the case studies are related to other issues such as collaboration, relationships, relational contracting, alliancing, legal issues.

It should be noted that performance evaluations may differ depending on variables such as performance metrics, evaluator party, and data quality. In this study, identified 33 performance evaluations among 148 studies were examined in terms of 7 performance areas which are cost, time, quality, communication, change management, business, and HSE. By reviewing the identified studies, findings in 7 performance areas are compiled and demonstrated in Table 5. Researchers have mostly studied cost (25 of 33 evaluations) and time (26 of 33 evaluations) performances.

As it is demonstrated in Table 5, most of the performance evaluations are based on a single sample, and the rate of IPD cases is low in sample sizes. Almost all of the studies are performed in United States, and the oldest performance evaluation for IPD is in 2003. Further, IPD has largely been implemented in healthcare projects, and there are limited outcomes in other types of projects such as office, education facility, and industrial.

6.1. Cost performance

IPD has superior cost performance compared to traditional PDSs (DBB, DB, and CMR) in evaluations 2, 3, 12, 20, and 21 in Table 5, however, other evaluations (6, 7, 9, 19, 22, and 23 in Table 5) with high sample sizes assert that there are no significant differences among the examined PDSs. IPD projects are completed within the budget or with a cost-saving according to 11 evaluations (5, 10, 13, 14, 15, 24, 25, 26, 27, 29, and 30 in Table 5). Only 3 evaluations (1, 11, and 28 in Table 5) indicate that there is a cost overrun in an IPD project. It can be concluded that IPD has no superiority over traditional PDSs concerning cost performance, however, IPD could provide a significant improvement in cost management at least by eliminating cost overruns.

6.2. Time performance

IPD has superior time performance compared to traditional PDSs in evaluations 2, 3, 7, 8, 12, 16, and 21 in Table 5, however, some evaluations (6, 9, 19, 20, and 22 in Table 5) assert that there are no significant differences among the examined PDSs. IPD projects are completed within the schedule or with a time-saving according to 11 evaluations (1, 4, 13, 14, 15, 25, 26, 29, 30, 32, and 33 in Table 5). Only 3 evaluations (24, 27, and 28 in Table 5) indicate that there is a delay in an IPD project. It can be concluded that IPD has a slightly superior schedule performance over traditional PDSs. Most of the time performance outcomes are positive regarding IPD implementation, and IPD could improve schedule predictability.

6.3. Communication performance

It is found that IPD has superior communication performance compared to traditional PDSs in all of the communication evaluations. According to the identified studies, the number of RFIs, the number of resubmittals, RFI processing time, and rework are decreased. Further, IPD projects provide a significant improvement in collaboration and relationships.

6.4. Other performance areas

8 of 33 evaluations provide findings in quality performance, and most of the evaluations (3, 7, 8, 12, 17, and 22 in Table 5) assert that IPD has superiority over traditional PDSs regarding quality performance.

All of the evaluations (7, 8, 9, 16, 22, 24, 25, 27, 28, and 32 in Table 5), which examine change management performances, indicate that IPD has superiority over traditional PDSs regarding change management performance. Further, there are fewer changes, quick decision-making, and flexibility for changes in IPD projects.

IPD has positive and superior business performance in all of the evaluations (7, 9, 14, 16, 17, 23, 25, 27, and 29 in Table 5) which examine business performances. In the identified studies, it is indicated that IPD provides increased market opportunities, fewer claims, pleased owner, long-term reliability.

There are only 4 evaluations regarding HSE performance among 33 identified evaluations, and no significant differences in HSE performances are determined. For the evaluation of HSE performance, we can note that the number of studies in the literature is insufficient.

7. Conclusion

This research conducted a systematic literature review in four steps, which included bibliometric search, scientometric analysis, an in-depth literature review, and a discussion about the performance outcomes of IPD.

In the bibliometric analysis, studies on IPD are examined in two extensive databases, Scopus and WoS. The combined data set including 207 publications is firstly analyzed in terms of publication years, and it is found that there are only 3 articles related to the identified research areas before 2000, and there are more than 10 articles per year after 2013. Further, it is observed that Ling, F. Y. Y is the most productive researcher with 11 articles related to the identified keywords, and United States has the highest number of articles. Moreover,

Table 5. The performance outcomes of IPD in the AEC sector.

No.	Studies	Sam. Sites	Project Names/Types	Countries	Years	Project Delivery Systems	Findings in Performance Areas					Business	Health, Safety and Environ.
							Cost	Time	Quality	Communication	Change Management		
1	(AIA, 2012; AIA California Council, 2010; Kahvand et al., 2018)	1	The Water Cronkite School of Journalism	USA	2006-2008	DB + IPD Principles	10.1% Overrun	1 Month Earlier	-	Inc. Collab.	-	-	-
2	(Kahvand et al., 2018)	2	A hospital project with 96 beds	-	2007	CMR	3.13% Saving	11 Days Delay	-	-	-	-	-
3	(Kahvand et al., 2018; Mesa et al., 2016)	1	A hospital project with 103 beds	USA	2010	IPD	10.27% Saving	81 Days Earlier	-	-	-	-	-
			A hospital project			DBB	25% Overrun	6 Months Delay	5 out of 10	-	-	-	-
			A hospital project			DB	4.4% Overrun	1 Month Delay	7 out of 10	-	-	-	-
4	(Durdyev et al., 2020; Hall & Scott, 2019; Zhang, Huang, & Peng, 2018)	1	A hospital project	USA	-	IPD	9.4% Overrun	2 Months Delay	6 out of 10	-	-	-	-
			A hospital project			IPD	6.9% Saving	2 Months Earlier	8 out of 10	-	-	-	-
5	(Hanna, 2016)	1	Sutter Medical Center in Castro Valley	USA	-	IPD Principles	10% Saving	30% Faster than DBB	-	-	-	-	-
6	(Cho & Ballard, 2011; El Asmar et al., 2013; Hanna, 2016; Kelly & Ilozor, 2022)	49	The Orlando Utilities Commission North Plant	USA	-	IPD (9) vs non-IPD (40)	No Signif. Differ.	No Signif. Differ.	-	-	-	-	-
7	(El Asmar et al., 2016; El Asmar et al., 2013; Hanna, 2016; Ibrahim et al., 2020; Kelly & Ilozor, 2022; Laurent & Leicht, 2019; Yu et al., 2019; Zhang, Huang, & Peng, 2018)	35	%50 healthcare project, %25 university laboratory, %25 other (Study by El Asmar et al., (2013))	USA	2005-2012	IPD (12) vs non-IPD (23)	No Signif. Differ.	Superior IPD	Superior IPD	Superior IPD	Superior IPD	Slightly Superior IPD	No Sig. Diff. in Saf. Sup. IPD in Envir.
8	(Hanna, 2016; Ibrahim et al., 2020; Kelly & Ilozor, 2022)	32	(Study by Iwanicki and Hanna (2013))	USA	-	IPD (9%) vs non-IPD (91%) DBB-CMR	No Signif. Differ.	Superior IPD	Superior IPD	Superior IPD	Superior IPD	Superior IPD	No Signif. Differ.
9	(Hanna, 2016; Ibrahim et al., 2020; Kelly & Ilozor, 2022)	-	(Study by Hanna (2016))	USA	-	IPD (9%) vs non-IPD (91%) DBB-CMR	No Signif. Differ.	No Signif. Differ.	No Signif. Differ.	Superior IPD	Superior IPD	Superior IPD	No Signif. Differ.
10	(Ballard et al., 2015)	46	(Study by Ballard et al., (2015))	-	-	IPD	In Budget (44)	-	-	-	-	-	-
11	(Ballard et al., 2015)	1	A hospital project	-	2010	IFOA	7.25% Overrun (2)	-	-	-	-	-	-
12	(Singletton & Hamzeh, 2011)	2	Pentagon Renovation Program (1/5 of the building)	USA	1998	DBB	6.4% Overrun	Behind Schedule	-	-	-	-	-
13	(Andary et al., 2020; Matthews & Howell, 2005; Singletton & Hamzeh, 2011)	1	Pentagon Renovation Program (remaining part)	USA	2003	PFIF + FPAF + IPD Principles	Under Budget	Goals Met	Goals Met	-	-	-	Goals Met
14	(AIA, 2012; Singletton & Hamzeh, 2011)	1	North Chiller Plant	USA	2007-2015	DB + GMP + IPD Principles	10% Saving	Goals Met	-	-	-	-	-
15	(Chan et al., 2016)	1	Cathedral Hill Hospital, 555 beds	USA	2015	IFOA	Cost Savings	Goals Met	-	Inc. Collab.	-	Incr. Market Opport.	-
16	(Schroeder, 2014)	2	A public drainage project	Hong Kong	2006	NEC3-based RC + IPD Principles	5% Saving	6 Months Earlier	-	-	-	-	-
17	(Paik et al., 2017)	2	A monumental structure	USA	-	GC/CM (Close to DBB)	-	On Time	-	-	-	Fewer Changes	-
18	(Kokkonen & Vaagaasar, 2018)	1	A monumental structure	USA	-	GC/CM (Close to DBB)	-	3 Months Earlier	-	-	-	Fewer Changes	-
19	(Kelly & Ilozor, 2022)	93	A small-scale office building project	USA	-	CMR (Owner changed IPD to CMR)	-	-	-	Average	-	Average	-
20	(Kelly & Ilozor, 2022)	49	A institutional renovation project	USA	2007-2015	IPD Principles (Separate contracts)	-	-	-	Adequate	-	Adequate	-
21	(Kelly & Ilozor, 2022)	72	Two hospital buildings with 289 beds and an energy centre	USA	2015	IPD (18) vs non-IPD (75)	No Signif. Differ.	No Signif. Differ.	No Signif. Differ.	Inc. Collab.	-	-	-
22	(Ibrahim et al., 2020)	109	(Study by Kelly and Ilozor (2020))	USA	-	IPD (7) vs non-IPD (42)	Superior IPD	No Signif. Differ.	-	-	-	-	-
23	(Choi et al., 2019)	17	(Study by Kelly and Ilozor (2013))	USA	-	IPD + Lean (53) vs non-IPD (17)	Superior IPD	Superior IPD	-	-	-	-	-
24	(AIA, 2012; AIA California Council, 2010)	1	(Study by Nguyen and Akhavan (2019))	USA	-	IPD (17%) vs non-IPD (83%) DBB	No Signif. Differ.	No Signif. Differ.	Superior IPD	Superior IPD	Superior IPD	-	No Signif. Differ.
25	(AIA, 2012; AIA California Council, 2010)	1	%43 institutional, %31 industrial, %20 commercial, %6 other (Study by Ibrahim et al., (2020))	USA (88%), Other (%12)	2010-2019	IPD (8) vs CMR (9)	No Signif. Differ.	No Signif. Differ.	Superior IPD	Superior IPD	Superior IPD	-	-
26	(AIA, 2012; AIA California Council, 2010)	1	Healthcare projects (Study by Choi et al., (2019))	USA	2009-2014	IPD (8) vs CMR (9)	No Signif. Differ.	-	-	Superior IPD	-	Superior IPD	-
27	(AIA, 2012; AIA California Council, 2010)	1	Autodesk AEC Solutions Division Headquarters, Interior Office Fit-Out	USA	2008-2009	IPD	Under Budget (0.9% Saving)	38 Days Delay	-	Inc. Collab.	Quick Decisions	-	-
28	(AIA, 2012; AIA California Council, 2010)	1	Sutter Regional Medical Foundation Medical Office Building	USA	2005-2007	IFOA	Under Budget (0.6% Saving)	Within Schedule	-	Inc. Collab.	Fewer Changes	Pleased Owner	-
29	(AIA, 2012; AIA California Council, 2010)	1	SSM Cardinal Glennon Children's Medical Center	USA	2004-2007	IFOA	In Budget	2 Months Earlier	-	-	-	-	-
30	(AIA, 2012; AIA California Council, 2010)	1	SSM St. Clare Health Center	USA	2005-2009	IFOA	In Budget	4 Months Delay Due to Owner's Change	-	Inc. Collab.	Flexibility for Changes	Pleased Owner	-
31	(AIA, 2012)	1	Enbridge Health Ambulatory Care Center	USA	2006-2009	IFOA	Over Budget (1.2% Overrun)	1 Month Delay	-	Inc. Collab.	Fewer Changes	-	-
32	(AIA, 2012)	1	MERCY Master Plan Facility Remodel, Healthcare - Renovation	USA	2010-2013	IPD	In Budget	Increased Schedule Predictability	-	Inc. Collab.	-	Getting Long-Term Reliability	-
33	(AIA, 2012)	1	Lawrence & Schiller Remodel, Office - Renovation	USA	2010	IPD	10% Cost Saving Expected Over DB	20% Time Saving Expected	-	-	-	-	-
34	(AIA, 2012)	1	Spano/Glass Austin Regional Office	USA	2010	IPD	-	Within Schedule	-	Inc. Collab.	-	-	-
35	(AIA, 2012)	1	Edith Green Wendell Wyatt Federal Building Modernization, Office - Renovation	USA	2009-2013	CMC + IPD Principles	-	Within Schedule	-	Inc. Collab.	Fewer Changes, Flexibility for Chan.	-	-
36	(AIA, 2012)	1	USCF Mission Bay Medical Center	USA	2007-2014	Multiple Indepen. Contracts + IPD Princ.	-	Within Schedule	-	Inc. Collab.	-	-	-

53.1% of the articles included in the bibliometric analysis is on the subject of engineering, and 41.0% of the articles is on the subject of business, management, and accounting.

In the scientometric analysis, the chosen studies are assessed using VOSviewer software. By conducting co-authorship analysis, it is found that Ling, F. Y. Y. has the strongest linkage, and Kumaraswamy, M. M. is the second author in strong collaboration with colleagues. In co-occurrence analysis, it is observed that the most frequently used author keywords are “integrated project delivery”, “relational contracting”, and “collaboration”. In addition, it is observed that Australia, United States, Hong Kong, and United Kingdom have the strongest linkage among the other countries.

In the comprehensive literature review part, definitions, principles, benefits, and barriers of IPD are reviewed and classified.

In the last part, findings in 7 performance areas are analyzed by reviewing the identified studies. Most of the performance evaluations are based on a single sample, and the rate of IPD cases is low in sample sizes. Almost all of the studies are performed in United States, and the oldest performance evaluation for IPD is in 2003. Further, IPD has largely been implemented in health-care projects.

It can be concluded that IPD has no superiority over traditional PDSs concerning cost performance, however, IPD could provide a significant improvement in cost management at least by eliminating cost overruns. Moreover, IPD has a slightly superior schedule performance over traditional PDSs. Most of the time performance outcomes are positive regarding IPD implementation, and IPD could improve schedule predictability. Furthermore, IPD has superior communication performance compared to traditional PDSs in all of the evaluations. According to the identified studies, the number of RFIs, the number of resubmittals, RFI processing time, and rework are decreased. Further, IPD projects provide a significant improvement in collabora-

tion and relationships. In addition, most of the evaluations assert that IPD has superiority over traditional PDSs regarding quality performance. Moreover, all of the related evaluations indicate that IPD has superiority over traditional PDSs regarding change management performance, and there are fewer changes, quick decision-making, and flexibility for changes in IPD projects. Additionally, IPD has positive and superior business performance in all of the related evaluations, and it is indicated that IPD provides increased market opportunities, fewer claims, pleased owner, long-term reliability. Lastly, there are only 4 evaluations regarding HSE performance among 33 identified evaluations, and no significant differences in HSE performances are found.

IPD presents a potential solution to challenges faced in conventional project delivery methods. While IPD provides significant benefits, its application is still relatively rare globally, and there are obstacles to its adoption. Findings show that IPD provides desirable performance outcomes in most of the performance areas, however, some advantages of IPD, which are projected in the literature such as increased profit, fewer injuries, higher sustainability, are not supported by the identified evaluations of IPD cases. IPD approach can attract practitioners' attention in the AEC sector in case well-documented studies are published and advantages are explained exactly. With the rising popularity of IPD and its potential as an effective approach, upcoming research directions may focus on real cases that highlight the main and optional IPD principles established in this study. Further, IPD implementation knowledge could be increased by future research in different types of projects, and future studies need to expand the data set in different geographical locations.

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Voicing the local interests: Expectations from the Trabzon-Erzurum Road and local demands in the Late Ottoman Gümüşhane

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Abstract

The late Ottoman Empire witnessed a period of intense centralization and infrastructural development as the state sought to consolidate its authority and modernize its provinces. Roads, administrative buildings and regional restructuring became the tools of this transformation, but they were also the focal points of tension between imperial priorities and local expectations. The case of Gümüşhane, a small town in northeastern Anatolia, illustrates how local communities attempted to negotiate with the state in the face of diminishing economic prospects and changing infrastructure routes. When the Trabzon-Erzurum Road was built without passing through the town center of Gümüşhane in 1872, locals used petitions, economic arguments, and social alliances to voice their needs. This study relies on extensive primary sources such as official correspondence in the Ottoman Archives (BOA), provincial yearbooks, and petitions submitted by locals. It examines how in the late 19th century the residents of Gümüşhane actively challenged and negotiated on the decisions of the Ottoman government regarding infrastructure, in particular road construction and administrative planning, and the state's indifferent or strategic responses to this pressure.

Keywords

Economic struggle, Gümüşhane, Local interests, Petitions, The Trabzon-Erzurum Road.

1. Introduction

In the late Ottoman Empire, transportation networks played a significant role in shaping the political, economic, and administrative fabric of the state. The expansion and reconstruction of roads were a part of the broader imperial efforts to consolidate central authority, facilitate military mobilization, stimulate trade, and integrate peripheral regions into the imperial core. As the empire confronted internal fragmentation and external threats in the 19th century, the strategic management of mobility and infrastructure became central to both governance and modernization. These projects were not merely technical undertakings but were deeply embedded in questions of power, local agency, and regional development. The placement of a road or administrative center could determine the prosperity or the decline of a town, influencing migration patterns, commercial viability, and the visibility of state authority. Consequently, transportation infrastructure became a site of negotiation between the central government and provincial populations, revealing the contested and often uneven nature of Ottoman modernization.

In the 19th century, one of these major transportation networks and infrastructure projects was the Trabzon-Erzurum Road. The importance of this route can be traced back to the Ottoman conquest of Crimea in 1475. Following the conquest, the Black Sea was effectively closed to foreign trade and maritime access was restricted to Ottoman ships only. This monopoly continued for almost three centuries, shaping regional trade and limiting the participation of foreign powers in the Black Sea trade. By the late 18th century, the Ottoman Empire reopened the Black Sea to foreign commercial shipping, redefining regional trade dynamics and enabling new land routes. This act allowed the Black Sea port cities to emerge as key gateways between the Ottoman inlands and global markets. In this context, the construction and maintenance of reliable inland routes, like the Trabzon-Erzurum Road, were seen as essential tools to facilitate the flow of agricultural products, raw ma-

terials, and manufactured goods from the eastern provinces to the coast. Due to the Ottoman-Russian rivalry and strained relations between Russia and Various European states, the strategic importance of the Trabzon-Erzurum Road increased further. As a result, with European powers supporting the expansion of this road network, the Ottoman government saw it as a vital passage that could bypass Russian-controlled territories and connect the empire to wider global markets. The reconstruction of the road started in 1850 and was completed in 1871.

The route from Trabzon to Erzurum passes through one of the toughest regions of northeastern Anatolia. In particular, the section in the Trabzon Province (vilayet), is characterized by steep mountains, rocky terrain, and deep valleys. The road must navigate through high altitudes, narrow passes, and areas prone to natural hazards such as erosion and heavy snowfall. These physical features make road construction and maintenance significantly challenging. Consequently, when determining the precise alignment of the route, both the physical geography and natural conditions, including climate and seasonal weather patterns, were carefully considered to select the most practical and stable path through this mountainous landscape (Tozlu, 1997). The final route was planned to start at the Trabzon Port, pass through Gümüşhane and Bayburt, and finally reach Erzurum, which is connected to trade roads extending toward Tabriz and India (Figure 1). [1].

Every town on this significant route had different expectations and agenda regarding the Trabzon-Erzurum Road. As the principal port city on the eastern Black Sea coast, Trabzon played a critical role in regional and international trade networks. By improving access to inland regions, Trabzon aimed to increase the volume of trade passing through its harbor, thereby reinforcing its economic prominence and securing a greater share of the customs revenues and commercial benefits associated with transit trade (BOA, İ.DH 400/26466).

Located near the eastern frontier of the Ottoman Empire, Erzurum had become a key military hub especially after the 1828–29 Russo-Ottoman War,

which exposed its vulnerability to Russian advances. By the late 19th century, Erzurum had been designated as the center of the Ottoman Fourth Army, making it a critical site for defense and military logistics. In this context, the Trabzon-Erzurum Road served as a vital supply and mobilization route, enabling the rapid movement of troops, weapons, and provisions from the coastal port to the eastern frontiers. The province's focus, therefore, was less on facilitating commerce and more on ensuring that the road could support the demands of military preparedness and regional security (BOA, DH.İD 25/11).

While the expectations of Trabzon and Erzurum were heavily intertwined with economic growth and military logistics, the small towns on the route, Gümüşhane and Bayburt, were motivated by more basic, survival-oriented concerns. For Gümüşhane, once a prosperous mining town, the road represented a potential means of revitalization, a chance to reconnect with larger economic systems after a long period of decline. Bayburt, despite its location on historic trade routes, had never grown into a major urban center.

For this city, the road was less about expansion and more about maintaining relevance and securing its place along an increasingly important corridor. In this sense, while the larger towns aimed for growth and influence, the smaller ones were simply striving not to be left behind.

1.1. The scope and the purpose of the study

While the roads were significant tools to meet economic and military expectations, they were also emerged as arenas of negotiation between local communities and the Ottoman State, where questions of economy, urban development and authority were debated. There are two important studies explore the significance of the Trabzon-Erzurum Road in the context of 19th-century Ottoman period. Tozlu's research (1997) focuses on the road as a key component of the Ottoman Empire's administrative and economic reforms, highlighting infrastructure developments and the state's efforts to assert control over provincial areas through investments like ports, inns, and quarantine stations. In contrast, Özkan's study

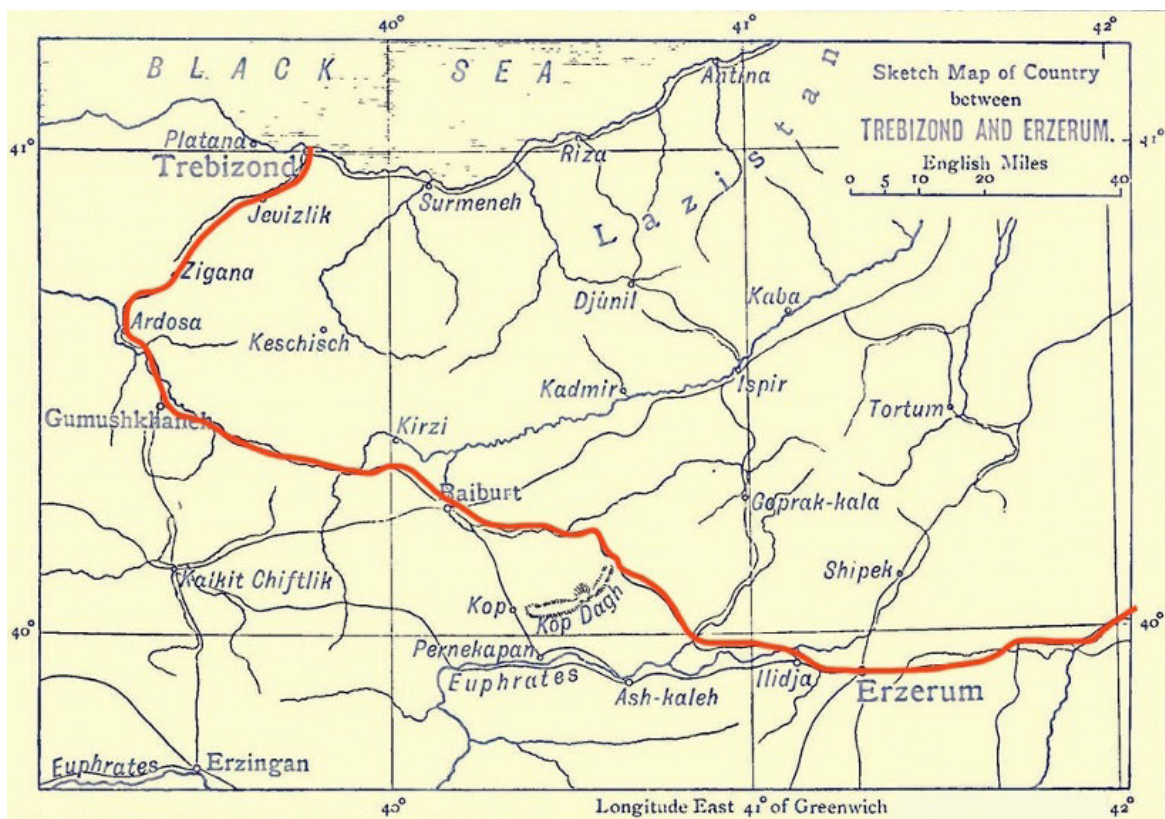


Figure 1. Trabzon-Erzurum Road, 1877 (Ryan, 1897).

Voicing the local interests: Expectations from the Trabzon-Erzurum Road and local demands in the Late Ottoman Gümüşhane

(2012) adopts a critical, bottom-up perspective, arguing that the road was not only a tool for logistical and economic integration but also a space where local actors influenced and reshaped local policies.

Building on this background, this article focuses on the town of Gümüşhane and examines how shifting transportation infrastructure impacted its urban and economic trajectory in the Late Ottoman Period. Historically founded as a mining town, the urban and economic development of Gümüşhane was deeply intertwined with both mining and its location along the regional trade routes. As mining activity declined by the late 18th century, the economy of the town grew increasingly dependent on trade, rendering its connection to the Trabzon-Erzurum Road crucial for survival.

The primary aim of this study is to investigate how the inhabitants of Gümüşhane responded to the infrastructural and administrative developments initiated by the Ottoman government during the second half of the 19th century, with particular focus on the routing of the Trabzon-Erzurum Road, the proposal to relocate the town center, and the administrative rivalry with Bayburt. By tracing the petitions, correspondence, and resistance the study examines how a relatively small town positioned itself against changing economic networks and state-led development initiatives. Focusing on the locals, it reveals how local communities actively participated in shaping imperial policy and urban planning. Rather than being passive recipients of top-down decisions, even if they mostly did not get the desired outcomes, the residents of Gümüşhane mobilized across religious and professional lines to advocate for their interests.

1.2 .The materials and method

This research is based on a detailed examination of Ottoman archival sources, including over a dozen official petitions (*arzuhal*), provincial yearbooks (*salname*), and imperial correspondence between local administrators and the central government. The primary materials were accessed through the Ottoman Archives of the Directorate of State Archives (BOA) and span the

period from 1871 to 1914, a timeframe that captures the official opening of the Trabzon-Erzurum Road, the immediate aftermath of the Russo-Ottoman War of 1877-78 and the expansion of state infrastructural efforts under Abdulhamid II. While yearbooks (Trabzon Provincial Yearbooks, TPY) provide detailed information on the administrative, political, economic, military, and social aspects of the provinces; the petitions reviewed include documents signed by Muslim, Greek, and Armenian communities, offering insight into multi-religious civic collaboration.

Petitions were a part of the Ottoman Justice System since 1649 (Faroghi, 1992, p. 5). With this system, the Ottoman subjects, regardless of their religion, ethnicity, age, status, or education level, could voice their concerns, make personal requests, report grievances, seek justice, complain about the authorities, request tax reductions, ask for appointments or exemptions, or report local problems. Petitions functioned not only as mechanisms for justice but also as instruments of political participation. Since its political system based upon the undivided sovereignty and rule of the Sultan, the Ottoman Empire lacked modern democratic institutions for much of its existence. As a result, its subjects were excluded from politics but they could still participate by striking, protesting, and most commonly, petitioning (Gara et al., 2011, pp. 1-21). Petitioning (*arzuhal*) was the most significant and accessible tool available for Ottoman subjects for political expression and participation. It offered ordinary people an opportunity to articulate their demands, express their complaints, and at times resist state policies. This enabled the individuals and communities to engage directly with the local and imperial authorities (Ginio, 2011).

An archive-based methodological approach has been adopted in this study to explore the socio-political implications of infrastructural development in the northeastern provinces of the Ottoman Empire in the 19th century. The analysis begins with a historical contextualization of the period following the official opening of the Trabzon-Erzurum Road. Then the ma-

This petition was not the only one sent by the inhabitants of Gümüşhane. In the following years, of 1873, 1884 and 1889, the inhabitants signed other petitions stating their demands regarding the road in question (BOA, ŞD 1827/49; İ.MMS 78/3421; BEOAYN.d 1224). In 1892, they raised their voice once more. In this petition signed by 134 locals, including the leaders of the three religious communities (Muslims, Greeks, and Armenians), merchants, craftsmen, artisans, tradesmen, and others, the reasons for the route change were explained again, and reconsideration was requested. They stated that the lack of cultivable land in Gümüşhane, a mountainous region, made the economy entirely dependent on trade. The inability to operate the mines increased the significance of trade and causing the Greek people engaged in mining to migrate to Russia. They tried to bring in convincing arguments by stating that if the government agreed on the route change, the repair work that had to be conducted every year on the secondary road would be terminated. This would reduce the costs and contribute to the local economy (BOA, BEO 11/803; ŞD 1844/11). When the petition was signed in 1892, the town's inhabitants were facing severe economic conditions. They stated that unless effective measures such as a change of route were taken, the current economic and demographic changes could not be reversed. They claimed it was unfair that they could not benefit from the trade road they had been forced to repair for the previous 25 years (BOA, ŞD 1844/11).

They pointed out that the trade road, which currently passed through the Bahçeler region, was frequently flooded due to the overflow of the Harşit River and needed constant repair, concluding that with this shift in the road, the government could both prevent these adverse conditions and avoid the repair costs (BOA, ŞD 1844/11). Despite repeated requests, the government rejected all proposals to alter the route, asserting that a change was unnecessary and that extending the road to the town center would be disadvantageous. Without detailing these disadvantages, the authorities maintained that even if

the route was altered, the expected benefits to the town would not materialize, as merchants favored the road through Bahçeler over the more arduous climb to the town center (BOA, DH.MKT, 1346/111). Ultimately, the government refused to allow the Trabzon-Erzurum Road to pass through the town center, prompting the inhabitants to seek alternative solutions to address the economic crisis facing the city.

3. Urban adaptation and relocation debates

When the government rejected their request in 1871, the inhabitants of Gümüşhane began to move to Bahçeler, where the Trabzon-Erzurum Road passed through. According to the 1877 provincial yearbooks (salname), there were already 253 households in the five neighborhoods settled in Bahçeler (TPY, 1877) [3]. This relocation can be interpreted as a practical solution to their growing economic struggles. In time, the residents even proposed that the entire town be relocated to Bahçeler as a way to cope with the ongoing economic difficulties. They built their case around the planned construction of a new government house in Gümüşhane, arguing that it would be more beneficial and cost-effective to build it in Bahçeler, where economic activity was increasingly concentrated.

By the last quarter of the 19th century, the existing government house in Gümüşhane (Figure 3) had become entirely unusable. In his report, the engineer of the sancak (sub-province) of Gümüşhane, Bekir Sıtkı Bey, asserted that repairing the building was no longer viable and would be a waste of resources. He argued that constructing a new building was the only reasonable course of action and recommended that it be built in Bahçeler. He believed it to be an essential step for the urban development of the town. He further noted that the residents of Bahçeler were willing to make a financial contribution, with half of the construction costs being covered by public donations (BOA, DH.MKT, 942/49).

The governor of the sancak of Gümüşhane, Mustafa Zihni Pasha, also supported the idea. In his petition, he

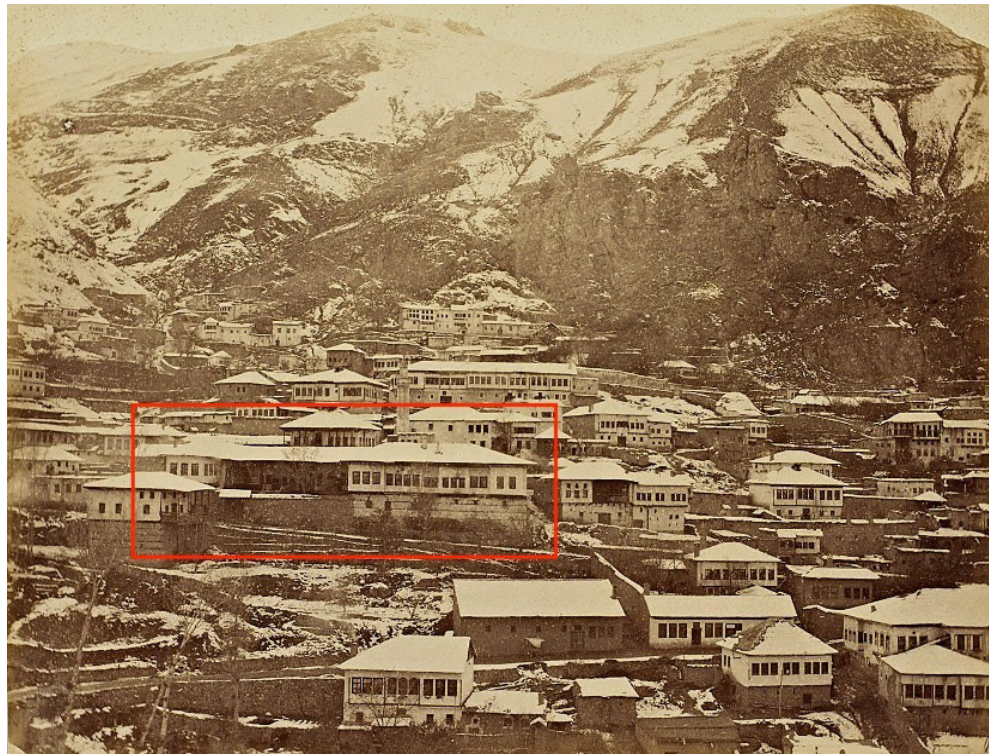


Figure 3. Former Government House of Gümüşhane in the Abdülhamid II Collection (Istanbul University)

highlighted that the main trade route between Trabzon and Erzurum passed far from the town center, prompting some inhabitants to relocate closer to the road. He argued that building the new government house in Bahçeler would promote development and help curb depopulation. Refizade Hacı Mustafa Efendi, a member of a prominent local merchant family, also expressed his support. Living in the Saadettin Neighborhood of Bahçeler, he offered a plot of land for the new building and pledged 50 liras in donations. He emphasized that constructing the government house in Bahçeler was vital for the town's future prosperity (BOA, DH.MKT, 942/49). These appeals eventually escalated into calls for the entire town's relocation. Petitioners argued that the existing downtown location was no longer viable as an administrative or economic center. They proposed moving the administrative center including the police station, telegraph office, and town hall to Bahçeler (BOA, BEO 2242/168091).

It is evident that influential families in the Bahçeler region, such as the Kadirbeyzâde, Refizade, Değirmencizâde, and Hacımustafazâde, supported the move. Since the government

buildings were located in the old town center, Bahçeler residents had to travel there to conduct their official affairs. Schools were also concentrated in the town center, and children from Bahçeler struggled to attend their courses, i.e. being deprived of access to education. Residents repeatedly submitted petitions requesting at least an elementary school in Bahçeler. By 1908, these petitions emphasized the imbalance: while the town center had elementary and middle schools for 500–600 households, Bahçeler, with its 500 households and five neighborhoods had no school at all (BOA, MF.MKT 1052/18).

However, not all residents supported the relocation. Many Muslim and Greek merchants in Gümüşhane, still hoping for the Trabzon-Erzurum Road to be rerouted through the town, strongly opposed the proposal. They contended that relocating the government center would hinder and not help the town's development. They stated that the current location of Gümüşhane was architecturally developed while the Bahçeler region was underdeveloped. Although there was a need for the underdeveloped areas to be civilized, it was wrong to abandon the places that had been developed for

centuries and had reached an admirable level. They argued that Gümüşhane was architecturally developed, with an established urban fabric—including mosques, churches, schools, markets, and around 700 households—while Bahçeler lacked infrastructure and was underdeveloped, aside from housing a military barracks. One petition pointedly criticized the proposed move, describing Bahçeler as “a desolate place with bad air” with only “30 households.” The petitioners further warned that relocating administrative buildings to remote, undeveloped areas could lead to social and security problems [4]:

“...The majority and perhaps the entire sophisticated and civilized people of the Ottoman Empire are mainly living in the places where the government houses are located, namely in the town centers. Since some of the murders are committed in the places that are far away from the government houses, have no schools and, have a lower level of development, that cannot serve the civilization of the people, transferring the new government house to such a desolate place would pave the way for various crimes and disasters. There had not even been a single case of murder in Gümüşhane for years. For this reason, it was unjust to demote the town of Gümüşhane from such a civilized state...” (BOA, ŞD, 1861/13; BEO 2943/220673).

This petition offers insights into contemporary ideas about what constituted a “civilized” city. According to their statement, a civilized city, for example, must be architecturally developed and have an urban fabric comprising religious and administrative buildings, schools, commercial buildings, and houses [5]. They cannot think of a city center without these buildings and the history behind them. Moreover, people who live in such a city are considered “civilized”. They wanted to live in a developed city and stated that moving the town to an underdeveloped area would be unjust. Despite their differing perspectives, both sides were concerned with the same overarching issue: the future development of the town (*kasabanın ümranı*). Both sides, those advocating for relocation and those resist-

ing it, claimed that their goal was only to secure a promising future for their town. This debate illustrates that even in a small provincial town, there was a vibrant and engaged public opinion regarding urban planning and development.

Finally the government intervened, stating that the continuous petitions were in violation of legal procedures (BOA, DH.MKT 1130/22) and the relocation of the government house to Bahçeler was firmly rejected (BOA, DH.MKT 1130/74). The government had never wanted to relocate either the inhabitants or the new government house of Gümüşhane and ordered the provincial government of Trabzon to stop this relocation attempt without any further explanations, since it would risk the urban development of Gümüşhane (BOA, DH.MKT, 1130/74). Thus, the building and city administration remained in their current location.

While the Ottoman government did not provide a clear explanation for its refusal to move Gümüşhane’s administrative center to Bahçeler, strategic concerns likely played an important role in this decision. The Harşit Valley, through which the Trabzon-Erzurum Road passed, may have been perceived as a sensitive military passageway, an unofficial buffer zone, especially at a time of deteriorating Ottoman-Russian relations. Following the Russo-Ottoman War of 1877-78 and the territorial losses in the east, the empire became increasingly concerned with fortifying border areas and maintaining control over critical transportation routes. Relocating administrative institutions close to a militarily exposed valley could be seen as a security risk, especially given the frequency of floods, the vulnerability of the road, and the strategic importance of the region in a future conflict. Thus, even without an official explanation, the state’s decision can be interpreted as part of a broader pattern of precaution shaped by military priorities and imperial concerns.

In the early 20th century, settlement in Bahçeler continued to rise. By 1907, there were approximately 500 households in Bahçeler and 600 in the town center. Gümüşhane and Bahçeler func-

tioned side by side as two interconnected parts of the same town. Residents of Bahçeler regularly traveled to the town center for work, school, and daily affairs, returning home in the evenings. Likewise, those living in the town center frequently went to Bahçeler to engage in trade. Despite this dual structure, the town ultimately remained in its original location, as the government never approved a full relocation. Nevertheless, the economic and demographic challenges that had prompted calls for relocation remained unresolved.

The debate over the relocation of Gümüşhane's government buildings was not only about administrative convenience or economic necessity—it reflected a deeper contestation over urban form and spatial hierarchy. In the late Ottoman context, the presence of official institutions such as government houses, schools, and telegraph offices was seen as central to the establishment of urban order and the projection of state power. The built environment thus played a critical role in defining what constituted a “civilized” space. Those who opposed a relocation invoked this framework, describing the old town center, with its mosques, churches, shops, and schools, as architecturally developed and symbolically complete, in contrast to Bahçeler's relative spatial emptiness. This view echoes broader trends in Ottoman urban modernization, where planned space, infrastructural visibility, and civic buildings were associated with progress and legitimacy. The petitions reveal that architecture was not simply a backdrop to social life, but a marker of identity and urban value, used both to justify permanence and to argue for transformation.

4. Administrative competition between Gümüşhane and Bayburt

The Ottoman Empire was defeated at the 1877-78 Russo-Ottoman War, losing lands to Russia. Before the war, the Vilayet (province) of Trabzon was formed by Sancaks (sub-province) of Trabzon, Gümüşhane and Lazistan, which includes the kaza (sub-sancak) of Batum (TPY, 1877). In 1879, however, the provincial year books indicate that

certain changes have been made in order to maintain economic vitality of the Vilayet of Trabzon and the sancak of Canik was placed in it (TPY, 1879). Erzurum, on the other hand, lost sancaks of Çıldır and Kars, known for their rich forests and salt mines, to the Russia (Çetin, 2021: 506). Thus, the income of the Vilayet of Erzurum has been reduced.

While pointing out the territory loss to Russia, Ismail Pasha, the Governor of Erzurum, suggested some changes in the administrative organization of the provinces. According to his proposal, a sancak of Bayburt had to be formed with the kaza of Bayburt as the administrative center, and the kazas of Kelkit and Şiran, which then belonged to the sancak of Gümüşhane, had to be placed in the newly formed sancak of Bayburt (Özger, 2007, pp. 79-80). With this proposal the governor aimed to maintain economic revenues of the Vilayet of Erzurum. In December 1878, the central government approved his proposal, and the sancak of Bayburt was formed. The kazas of Kelkit and Şiran belonged in it together with kazas of Tortum and Ispir (BOA, İ.ŞD 42/2224) [6].

Despite its long and rich history, Bayburt remained under the shadow of Erzurum especially during the Ottoman Regime. Although it was on the important trade routes such as Trabzon-Erzurum-Tabriz, Van, and Bitlis Roads, the town did not grow bigger. Therefore, with this change in the administration, Bayburt was finally able to fulfill its long-awaited wishes and had a chance to escape from a state of relative isolation. However, this new arrangement provoked a strong reaction from the Gümüşhane residents and they immediately petitioned the government. The document, dating January 1879, was signed by 115 people from Muslim, Armenian, and Greek communities of Gümüşhane. They stated that they received the news from the newspaper “Ceride-i Havadis” that the kazas of Kelkit and Şiran had been transferred to the newly formed sancak of Bayburt. They described the potential negative consequences if the news were correct, underlining that the trade would come to a halt, the poor

people would migrate “barefoot and bare-headed (yalın ayak baş kabak),” and the rest of the population would be forced to migrate “since they could not stay here for their rickety houses, which were worth five or ten kuruş”. The residents of Gümüşhane emphasized that if Kelkit and Şiran remained lost, the town would turn into ruins in a short time (BOA, ŞD 1830/37).

The towns of Kelkit and Şiran also responded negatively to this situation. In the petition from Şiran, signed by 118 local people from all three religious communities, the following was stated: “When we went to Gümüşhane to conduct official affairs, both the officials and the residents of Gümüşhane offered all kinds of assistance, hosted us in their homes; we were unable to establish these kinds of relations with Bayburt.” Moreover, they explained that being forced to go to Bayburt, which was twice as far away as Gümüşhane (Figure 4), was not acceptable in return for the years of service the people of Şiran had provided to the state. The inhabitants of Kelkit, 107 Muslims, also emphasized that being part of the sancak of Gümüşhane was highly important in terms of good relations established over time and that

it was unjust to be part of the newly-formed Bayburt. Moreover, both Kelkit and Şiran inhabitants stated that if they were not placed in Gümüşhane again, many of them would be forced to migrate. However, they had a strong belief that the Sultan would protect the wellbeing of his subjects and spare them from such dire consequences (herbirimiz memalik-i şâhânenin bir tarafına nakl ve hicrete kıyam olunacağı emr-i tabii bulunmuş ve buna ise rahm-ı şefkat-ı aliyyeleri kâil olamayacağından) (BOA, ŞD 1830/37). In the end, the request of Kelkit and Şiran was rejected. After some investigations, the government believed that this action of residents might derive from the personal benefits of some individuals from the Gümüşhane and therefore, these two kazas remained under the sancak of Bayburt (Özger, 2007, p. 103).

In 1882, four years after the change, the inhabitants of Gümüşhane sent a second petition to the government signed by 146 people. According to this petition, with the loss of Kelkit and Şiran in 1878, Gümüşhane had slowly fallen into ruin. In the last four years, some non-Muslim residents who had difficulty making a living had migrated

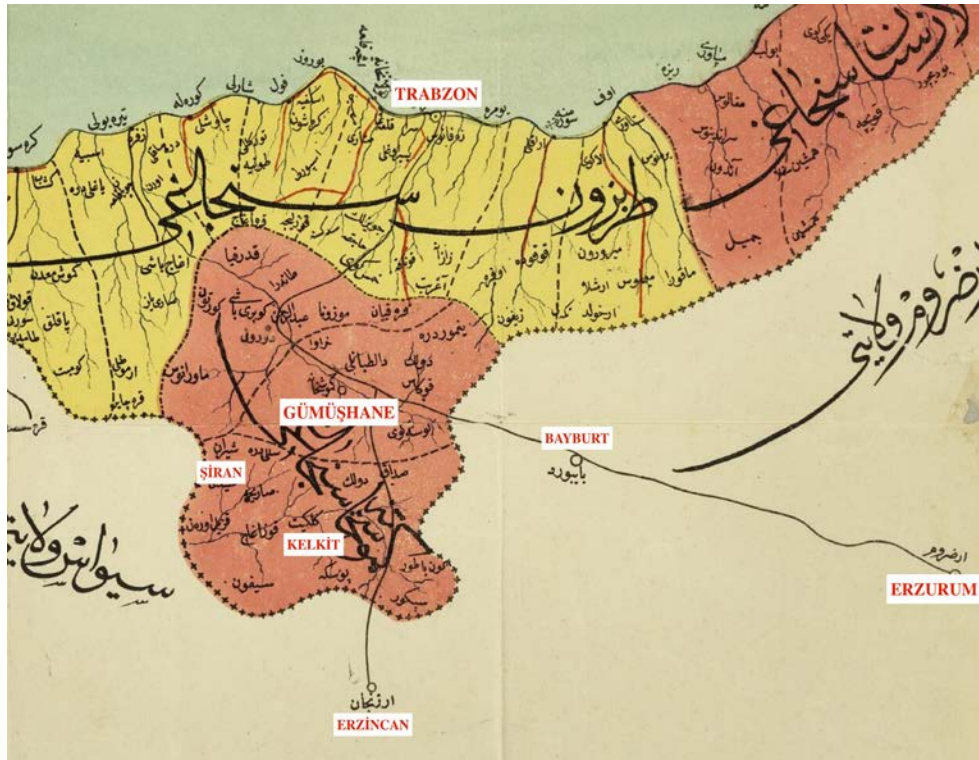


Figure 4. The Locations of sancak Gümüşhane and Kazas of Bayburt, Kelkit and Şiran, 19th Century (BOA, HRT.h 0622).

to Kars or Russia, and it was estimated that if migration continued, some settlements in the sancak of Gümüşhane would be abandoned entirely. In this petition, the Gümüşhane Provincial Council described the current economic conditions of the town, mentioned the decrease in commercial income due to the Trabzon-Erzurum Road passing far from the center, and painted a picture of the negative situation caused by the loss of Kelkit and Şiran above all. Under these circumstances, transferring Kelkit and Şiran back to the sancak of Gümüşhane, as they were in the previous years, would have solved all these problems to some extent. The provincial council also reported that the people had great difficulty in traveling to and from Bayburt and were attacked by highway robbers due to the lack of proper roads and security. They argued that the shorter distance of Kelkit and Şiran to Gümüşhane would make a re-transfer also economically much more advantageous (BOA, ŞD 1834/20).

This matter, which remained unsolved for a long time, was re-submitted to the Ministry of Internal Affairs by the Trabzon Provincial Administrative Council in May 1887. Accordingly, ever since the sancak of Bayburt was formed in 1878, the inhabitants of Kelkit, Şiran, and Gümüşhane were dissatisfied with this change, which was not very logical in terms of both location and administrative order, and it was understood that this change was made only because of the Governor of Erzurum's request. In the end, the Ottoman government demoted Bayburt back to the status of a kaza, and retransferred Kelkit and Şiran to Gümüşhane with a ferman dated December 5, 1887, after seven years (BOA, İ.MMS 94/4000). In the yearbooks, the Ottoman Government stated the following:

"The residents of the kazas of Kelkit and Şiran, which are situated closer to Gümüşhane, have long been going to Gümüşhane to deal with their affairs and other needs; but now they were forced to go to Bayburt, which was further away from them and had no connection with the city. This situation was not in their best interests. Therefore, upon the demands and requests

made to the Sublime Porte, it was decided to abolish the sancak of Bayburt and return kazas of Kelkit and Şiran to the sancak of Gümüşhane as of the year 1304 (1887)." (Trabzon Provincial Yearbooks, 1888).

Even though Gümüşhane's residents were pleased with this change, the inhabitants of Bayburt were not. On January 12, 1889, a petition signed by 140 Bayburt locals was sent to Istanbul. They objected to the decision, stating that it was unreasonable to demote the status of Bayburt, which was located on the Trabzon-Erzurum, Van, and Bitlis Roads. As a distinguished settlement with 2500 households, Iranian merchants frequently used Bayburt, and the gendarmerie was permanently stationed there; therefore, there was no security gap. "If the importance of Bayburt had been understood in the slightest, it would have been unthinkable to take this decision, which is entirely incompatible with justice. It was inappropriate that Gümüşhane, which had no importance compared to Bayburt and consisted of only 400 households and some rocks, had the status of a sancak." Therefore, Bayburt demanded that the decision be re-evaluated by considering the mentioned circumstances (BOA, ŞD 1507/22).

The official response of the government remains undocumented, but the yearbooks state that Gümüşhane maintained its sancak status while Bayburt was registered as a kaza (EPY, 1892; TPY, 1890). As mentioned earlier, Bayburt was, in fact, not really safe and had security concerns regarding the Trabzon-Erzurum Road. In addition to the highway robbers and gangs on the road, the section reaching Erzurum through Mount Kop was physically quite dangerous. It needed frequent repairs and caused many people to die (Özkan, 2012, p. 456). The winter months particularly dangerous. Heavy snowfall restricted the transportation of caravans and military supplies, and wagons frequently got stuck in the snow (Özkan, 2012, p. 217). The residents of Bayburt, who had to travel to Erzurum through Mount Kop to conduct official affairs, demanded that their status be upgraded and transformed into a sancak. According to the petition, the refusal to

upgrade Bayburt to the level of a sancak prevented the development of Bayburt and caused many people to lose their lives on this road (Özkan, 2012, p. 456).

In 1914, one more time, the notables of Bayburt sent a telegraph to the Ministry of Interior, asking for an upgrade of the status of Bayburt. According to them, Bayburt was now an economically, geographically, and militarily crucial political center; however, it still depended on Erzurum to conduct some particular official affairs. The government's response is unknown, but kaza's status was never upgraded again.

In the end, one can quickly realize that this disagreement derives from the lack of proper roads in the region. Residents of Bayburt were forced to use the route, which was in bad shape, and passed through Kop Mountain to reach Erzurum. The same case applies to Gümüşhane as well. The road in the Gümüşhane region needed constant repair since the Harşit River caused floods at least once a year and continued for two months. Lastly, a speech given by the mayor of Erzurum shows that in 1910, the region still lacked proper roads (BOA, DH.İD, 77/11).

5. Conclusion

One of the key findings of this study is the tension between local needs and imperial priorities. The decision not to reroute the Trabzon-Erzurum Road through Gümüşhane's town center, despite persistent petitions, reveals how logistical efficiency, topographical considerations, and imperial military concerns often outweighed local socio-economic needs. The rejection of the local demands by the Ottoman State, citing issues such as steep terrain and construction costs, suggests a pragmatic yet centralized approach to infrastructure planning.

At the same time, the agency of local actors is a major theme. The repeated petitions from Gümüşhane residents, with Muslims, Armenians, and Greeks acting together, demonstrate a shared civic consciousness and a willingness to engage with imperial governance mechanisms. These petitions of locals reflect the community's desire for

economic growth, the importance of trade, and a sense of inequity and accessibility. They also indicate that locals were not passive recipients of state policy, but active participants in shaping their environment. The 1892 petition, in particular, stands out as a case of multi-communal cooperation based on shared economic interests.

The attempted relocation of the administrative center from Gümüşhane to Bahçeler introduces a second layer of contestation, this time within the local community itself. This debate reflects two different visions of urban civility and development: One rooted in the historic, architecturally developed center, and the other seeking opportunity near the trade route. This divergence illustrates how material infrastructure and spatial hierarchy were central to how communities understood modernity, legitimacy, and survival. Moreover, the case reveals the urban space's intimate ties to identity. For the defenders of the oldtown, "civilization" meant permanence, schools, and religious institutions, while for Bahçeler's proponents, it meant growth, infrastructure, and opportunity. The debate was not merely about geography but about urban legitimacy, with architecture and institutions used as proxies for progress.

This case also demonstrates how economic strains can reshape urban pattern and function. The circumstances forced the city to adapt, resulting in a fragmented urban structure. Over the years, the town had effectively existed in two parts: One physically far from economic opportunities, the other far from administrative facilities. Yet despite this spatial separation, Gümüşhane and Bahçeler remained socially and economically connected. The daily commute of Bahçeler residents to the city center for school, work, and official business demonstrates how economic imperatives reshaped everyday life and urban space without completely breaking traditional civic ties. This duality even influenced the urban planning of Gümüşhane in 1930s. The new government of the Republic of Turkey invested in the Bahçeler area due to its advantageous location near the main road, leading it to become

the new center of the town, while the old town center gradually transformed into a residential neighborhood.

Lastly, the rivalry between Gümüşhane and Bayburt over administrative status further reinforces the local understanding of legitimacy and survival. When Bayburt was briefly upgraded to a sancak and Gümüşhane lost control over Kelkit and Şiran, the reaction was immediate and intense. These administrative decisions, though framed by the state as practical rearrangements, were interpreted locally as existential threats. Both towns engaged in territorial lobbying, emphasizing their importance through population size, trade routes, communal harmony, and strategic location. The eventual reversal of the decision in 1887, the returning Kelkit and Şiran to Gümüşhane, highlights that persistence and collective petitioning could yield tangible results, even in the face of centralized authority [7].

This study contributes to a growing understanding of how local communities in the late Ottoman Empire engaged with state-led modernization and administrative centralization. The case of Gümüşhane, its contest with Bayburt, and the infrastructural politics surrounding the Trabzon-Erzurum Road provide valuable insights into the negotiation between imperial policies and local agency. It demonstrates that infrastructure decisions had lasting socio-economic consequences for regional centers, and that petitioning was a widespread and effective means by which even small towns could voice concerns and propose alternatives. Urban identity and legitimacy were closely tied to architecture, institutional presence, and historical continuity, shaping local claims to administrative importance. The Ottoman state's reluctance to relocate centers or alter infrastructure plans stemmed not only from economic considerations but also from strategic and security concerns, especially in contested border areas like the Harşit Valley. Overall, Gümüşhane's experience illustrates that while the central state exerted significant control, local actors were not passive recipients of imperial policy. Through collective action and strategic negotiation, they

engaged in the politics of space, infrastructure, and identity, asserting their agency in the shaping of their urban and regional futures, and also their way of engaging with politics implies the local belief that state has obligations to the public [8].

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Endnotes

[1] The route from Trabzon to Erzurum had already existed, its first appearance was in a written document in 370 BCE by Xenophon in his famous work, *Anabasis*. In the 1850s this route wanted to be transformed for modern transportation methods. For a detailed reading: Tozlu, S. (1997). *Trabzon-Erzurum-Bayezid Yolu (1850-1900)*. (Unpublished doctoral dissertation) Atatürk University, Erzurum.

[2] While the road charters do not explicitly follow a cost/benefit approach, the Ottoman government often appears to have acted accordingly. In practice, infrastructure projects were often focused in economically or strategically important areas, indicating a concern to maximize the return on investment, whether in the form of trade facilitation, administrative control or military mobility. This tendency can be observed in the prioritization of roads connecting key provinces to port cities or central hubs, even if official documents do not directly reflect this logic. Such a mismatch between official discourse and administrative practice reveals the pragmatic dimensions of Ottoman statecraft in the late imperial period.

[3] At this point, we should consider that the inhabitants who moved to Bahçeler cannot have been struggling economically and that they could construct a second house. Thus, their reaction cannot be seen as a necessity but as a choice. For example, the Kadirbeyzâde Family, mentioned in the following chapter, had more than two houses in the Bahçeler. Most known

members of this family were the Zeki Kadirbeyoğlu and Hasan Fehmi Ataç, two members of the parliament from Gümüşhane. For more information see: Elveren, A.S. (2019). Altı Yüzyılın İzinde: Kadirbeyoğlu-Ataç Ailesi, Librum Kitap. Also, the Refizade Family, who had the biggest mansion in the town center, moved their house to Bahçeler. Refizade (Yüce) Family, was and still is one of the most prominent families from Gümüşhane. Their mansion in town center was even bigger than the government house itself. For more information: San, S.Ö. (2014). Vadideki Gümüşhane. T.C. Gümüşhane Valiliği Yayınları.

[4] “memâlik-i mahrûse-i şâhânenin ekserîsinin ve belki de umûmîsinin terakkî-i hâzırararı (gelişmiş ve medeni insanları) başlıca hükûmet konaklarının bulundukları mahallerde görülmekte bulunduğu gibi cinâyât-ı muhtelifenin bir kısmı hükûmet konaklarının uzak bulundukları mahallerde zuhûr ve diğer kısmı mekâtibsiz kalan veyâhud dún (gelişmemiş) bir derecede bulunup da ahâlinin bi-hakkın temeddün etmesine (medenileşmesine) hizmeti olamayan mekâtib mahallerinde görüldüğü cihetle sâye-i âsâyiş-vâye-i hazret-i pâdişâhîde kemâl-i emn ü istirahatle ve beş senede bir cinayet îkâ’ edilmeyen (işlenmeyen) Gümüşhane kasabasının şu meziyyetinden düşürülmesi dahi muvâfık-ı nisfet olamaz.(hakkaniyetle bağdaşmaz)” (BOA, ŞD, 1861/13; BEO 2943/220673).

[5] The government buildings were not just a top-down imposition of authority but also a reflection of local aspirations. For local elites and residents, having a government house (hükümet konağı) in their town elevated their social and political standing. It suggested that their town was significant enough to deserve direct administrative attention from the central government. Thus, the construction of a hükümet konağı was both a state-led initiative and a local project, where the desire to appear modern, connected, and important was shared by both sides.

[6] This decision must have been put into action in 1880. According to the Trabzon Provincial Yearbooks (Trabzon Vilayet Salnameleri) in 1879, the sancak of Gümüşhane was still formed

by the kazas of Torul, Kelkit, Şiran and nahiyes (kanton) of Yağmurdere, Kürtün and Kovans (TPY, 1879). The following yearbook was published in 1881, and only the kaza of Torul was recorded as part of the sancak of Gümüşhane (TPY, 1881).

[7] It may be inferred that Gümüşhane, or the Province of Trabzon to which it belonged, enjoyed comparatively stronger representation at the central level, which in turn allowed it to exert a more pronounced influence over the government.

[8] The petitions clearly imply that the state is not only a sovereign authority but also a responsible guardian of its citizens’ welfare and rights; especially regarding information, education, and expression. For a detailed reading, see: Karagoz-Kizilca, G. (2011). Voicing the interests of the public? Contestation, negotiation, and the emergence of Ottoman language newspapers during the financial crises of the Ottoman Empire, 1862–1875. State University of New York at Binghamton.

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Prize for sheltering: Architectural competitions and displaying the social housing production in mid-century Istanbul

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Abstract

The post-war housing crisis was a global phenomenon and manifested in Turkey. Despite its absence from the war, the subsequent economic difficulties prompted rural populations to relocate to the cities. Istanbul became a popular destination for domestic migrants, and as the 1950s drew near, the housing crisis gave rise to the potential for the emergence of slums and urban sprawl. In order to address this issue, the government initiated significant measures to facilitate social housing production. In order to facilitate a participatory production process, they held architectural competitions to design social housing. The young architects awarded prizes in these competitions subsequently participated in the housing production process for the remainder of their professional careers. Concurrently, exhibitions were organized worldwide, providing a platform for countries to share their experiences with social housing. Türkiye Emlak Kredi Bank, the institution responsible for producing social housing, participated in these international exhibitions and represented the country. This study examines the outcomes of social housing competitions held in mid-century Istanbul to address the housing crisis. Also, it analyses the impact of these competitions on the city's housing production culture. In particular, the information obtained from periodicals proved invaluable in identifying the architectural competitions, the organizing institution, the jury members, and the architects and engineers who received degrees. A review of the architectural retrospectives of the award winners revealed their contributions to the social housing production process in Istanbul after the competitions. This research contributed to the history of housing production in the 20th century by revealing previously invisible information.

Keywords

Architectural competitions in Turkey, Housing exhibitions, Housing problems, Low-cost housing, Social housing.

1. Introduction

The housing problem in Istanbul manifested in the emergence of slums after World War II. The government enacted a series of regulations to address the housing problem, and designated actors to oversee housing production to meet the housing needs of low-income residents. Türkiye Emlak Kredi Bank and Istanbul Municipality are significant governmental institutions that have been instrumental in this endeavor. In the mid-1940s, *Istanbul İmar Limited Şirketi*, a company established as a partnership between the two institutions, constructed 28 social housing units in Mecidiyeköy and 26 in Haseki. In the early 1950s, the Bank proceeded with the construction of Levent and Koşuyolu in phases, thereby introducing the concept of planned neighborhood to Istanbul. Concurrently, the Municipality continued to produce a limited number of low-cost housing units in Selamsız and Koşuyolu. Both institutions organized architectural competitions to determine the prototype projects for the social housing they would construct in the mid-century. A daily newspaper, *Yeni İstanbul*, held a parallel competition for architecture students. In the wake of the experience gained in social housing production and planned neighborhood construction, Türkiye Emlak Kredi Bank prioritized mass housing production in the second half of the 1950s. In 1955 and 1966, the Bank organized two competitions to identify the ideal master plans for the urban areas it would subsequently develop. In addition to serving as the subject of a limited number of architectural competitions in Turkey, the housing problem has also been a central topic at international exhibitions. A pavilion constructed for the Izmir International Fair in 1951 hosted an exhibition of the Bank's social housing developments and the International Housing Exhibition. In 1962, the Bank also represented the Turkish social housing production in another exhibition organized by the International Federation for Housing and Planning in France.

The struggle against the housing problem in Istanbul represents a critical phenomenon in urban history. In

particular, the neighborhoods constructed by Türkiye Emlak Kredi Bank have been referenced in most publications on Modern Turkish Architecture or the urbanization of Istanbul. The aforementioned architectural competitions have also been the subject of various studies, yet insufficient information about their process exists. Yüzer (2019) indicated a dearth of information about the winners of the prototype project competition organized by the Istanbul Municipality in 1950 for the low-cost housing to be built in Selamsız and Koşuyolu. Similarly, Kaplan Çinçin (2023) asserted an absence of information concerning the jury members, specifications, and results of the Türkiye Emlak Kredi Bank's competition in 1948 for the prototype projects to be used in the construction of Levent Neighborhood. The data presented in the previous studies underscored the necessity for a more comprehensive investigation and comparative analysis of architectural competitions organized to address the housing problem in Istanbul. In this context, an exhaustive examination of the periodicals from that period, mainly the daily newspaper archives, facilitated the identification of the organizing institution, the jury members, the number of participants, and the prized designers in architectural competitions. The comparative analysis of the three prototype projects and two master plan competitions that were the subject of this study contributed to the revelation of the figures involved in the struggle against the housing problem. Architectural competitions function not only as design tools but also as socio-political practices that ensure institutional legitimacy. As stated by Şahin (2010), the legitimization of physical visibility of the decisions framed by power is achieved through design competitions. Additionally, he evaluated design competitions as a method that reconciles the decision makers in politics, science, and aesthetics, thereby enabling a triple legitimacy. Indeed, the housing production of the Türkiye Emlak Kredi Bank and Istanbul Municipality was the subject of substantial criticism from the experts of the period. Despite the advocacy of architects and plan-

ners for the apartment block model of housing production, both institutions maintained a strong opposition to the detached or row-house model. The decision to utilize architectural competitions to determine prototype projects for housing production served to mitigate the number of critiques received. Another salient feature of architecture competitions is that they serve as a formative practice for young architects, shaping their professional careers. Sagalyn (2006) argues that for young designers, participating in competitions serves as a conduit for achieving public recognition, representing a potentially efficacious avenue for self-promotion. Young Turkish architects have been recognized with awards in housing competitions and have contributed to housing production throughout their professional careers, proving Sagalyn's perspective. Research on the architects involved in the competition processes and their work on social housing production throughout their professional lives revealed that these competitions were not merely short-term design contests but a critical juncture in Istanbul's urban history. Despite the various news regarding international housing exhibitions in periodicals, they were not the subject of any academic in-depth research. The authors' archives contained several rare ephemera items, which proved invaluable in helping to elucidate the content of the exhibitions. This study aims to contribute to the history of architecture by examining the competitions and international exhibitions organized in the scope of the struggle against the housing problem in Istanbul, focusing on the city's 20th-century architectural productions.

2. Housing problem and struggle in Istanbul

Istanbul underwent significant transformations during the interwar period. Ankara, the seat of government since 1920, became the capital in 1923, resulting in Istanbul losing the status it had held for centuries. Therefore, dignitaries and bureaucrats relocated to Ankara. Moreover, the European population returned to their countries due to exchange agreements following

the Great War. As a consequence of these factors, the population of Istanbul declined significantly. This situation resulted in a reduction of urban investments and was detrimental to the housing sector. The construction of new housing was not feasible, and repairing existing ones was beyond the scope of possibility. International aid concluded the stagnation period of Istanbul's urban development in the early 1950s. The United States provided aid to developing countries during the period through the Truman Doctrine and Marshall Plan. Karataş (2022) mentioned that the Marshall Plan remarked self-help and cooperation to launch the Western Bloc's economic, political, ideological, and cultural integration. Asserting Turkey was among the initial recipients of the Marshall Plan, Erdim (2020) stated that the construction of the Istanbul Hilton Hotel, designed by the US-based architectural firm Skidmore, Owings, and Merrill (SOM), and the establishment of an effective transportation system of avenues and highways in the Historical Peninsula were made possible through this Plan.

Furthermore, one of the primary objectives of the restructuring Turkey was industrialization. Istanbul no longer serves as the capital and was an optimal selection for an industrial city that boasts a plethora of plants, many of which commenced operations in the 19th century. From the 1930s onward, government agencies updated and reactivated the existing industrial plants they had taken over, incorporating new additions. In addition, they have also built new, modern facilities. Investments continued until the advent of World War II, thereby expanding the city's employment opportunities. The post-war economic depression had a global impact and repercussions in Turkey. Those experiencing financial difficulties, particularly in rural regions, relocated to cities to persevere in maintaining a basic standard of living. This community mainly preferred Istanbul for the city's high concentration of industrial employment opportunities. As the 1950s approached, the city's population experienced a dramatic in-

crease. However, the insufficient housing stock to meet the needs of internal migrants resulted in Istanbul's housing crisis.

The new residents of the city were low-income laborers. Without initiatives to address their housing needs, they had to find a solution on their own, resulting in the construction of informal housing that took just a couple of days to complete. Dülgeroğlu-Yüksel (2023) stated that the industry is the primary determinant for locating informal housing. Indeed, in a short period, slums began to surround industrial areas. Informal houses (named as *gecekondu*) were constructed on state land without authorization, lacked infrastructure systems and were inadequate even for minimum comfort conditions. Karataş (2022) stated that US housing experts produced a series of reports during and after the Marshall Plan. In 1951, Skidmore, Owings, and Merrill (SOM) conducted an on-site observation and prepared a report, and Donald Monson in 1953, Charles Abrams in 1954, and Bernard Wagner in 1956 followed them. In their report, which was compiled following research in Turkey during the construction of the Istanbul Hilton Hotel (Erdim, 2020), Skidmore et al. (1951) underscored the hygiene issues associated with the substandard housing conditions prevalent in the slums of Istanbul, emphasizing the potential adverse implications for future generations. Unlike foreign experts who identified the housing problem during site visits and documented its risks in their reports, Kessler (1949) proposed solutions. He had been a resident of Istanbul since the 1930s and was better acquainted with the city's dynamics. He also had previously held the position of director of the Heimstätten Housing Cooperative in Jena while in his homeland. As a consultant during the production process of Bahçelievler Cooperative Houses in Ankara (Akcan, 2012), Kessler was forthcoming in sharing his experiences in various publications, contributing to the struggle against Istanbul's housing problem.

Before 1950, the housing problem of Istanbul had received recognition, and

the initial efforts to address it had commenced. A series of regulations enacted by the government have established a framework to address the housing crisis. It is beyond question that the most significant regulations were the organization of Türkiye Emlak Kredi Bank and the authorization of municipalities for housing production. Established in 1926, Emlak ve Eytam Bank was transformed in 1946 into Türkiye Emlak Kredi Bank, based on the French *Crédit Foncier* model, a hybrid institution that is both state-owned and private. In addition to providing financial support for construction to address the housing problem, it also directly constructed social housing. Levent Neighborhood (Aru & Gorbun, 1952) on the European side of the city and Koşuyolu Neighborhood (Salman, 2021) on the Anatolian side are residential complexes comprising detached units in gardens, built by the Bank in phases during the mid-century. Gül (2017) described these neighborhoods as well-planned and hygienic alternatives for citizens, comprising modest-sized houses. It is also pertinent to mention Law No. 5228 on Building Construction Incentive of 1948. This law commissioned municipalities to plan and distribute state land for housing construction. Despite Istanbul Municipality preparing numerous master plans (Öztürk & Salman, 2023) by the provisions of this legislation, the housing production did not materialize due to the unresolved issue of financing. Aru (1951) criticized the law, asserting that the lands on the city's periphery, which lacked the necessary infrastructure, were intended for distribution and would not allow for settlement even if they were given free of charge, let alone in installments. In 1950, Law No. 5656 on the Addition of the Municipal Law instructed municipalities to construct, sell, or lease housing units for low-income residents. Istanbul Municipality started to work with the authorization granted by the law and built 50 houses in Selamsız and 100 houses in Koşuyolu in 1951-1952 (Öztürk, 2020). Another Law, No. 6188, which came into force in 1953, authorized the labor housing cooperatives in housing production, and municipalities were no longer directly

involved in the process. Instead, they served the role of institutions responsible for planning and distributing state land to cooperatives.

The enactment of regulations facilitated the construction of many planned neighborhoods with detached and row houses typology in Istanbul. The second half of the 1950s witnessed experimental cases of a novel housing typology. Türkiye Emlak Kredi Bank initially implemented the apartment block housing on Atatürk Boulevard and hereafter expanded this approach to a larger scale, with numerous units constructed in the fourth phase of Levent. Subsequently, the Ataköy Neighborhood, built in phases, became Istanbul's inaugural mass housing development comprising apartment blocks. From the early 1960s onwards, the housing production of the Bank and the housing cooperatives underwent a complete shift in focus, transitioning towards the apartment block typology. However, the ownership status of condos constructed during that period was complex. The Law No. 634 on Flat Ownership, enacted in 1965, clarified this complexity and provided a legal framework for selling units at different building levels to a variety of users (Bozdoğan & Akcan, 2012).

3. Prototype project competitions

Katsakou (2010) argues that housing competitions refer to a product that interests the public, and any dialogue that develops is crucial in defining the relationship between the architects and the public and, thus, the role of the profession's place in society. The institutions entrusted by regulations with the production of social housing, Türkiye Emlak Kredi Bank and Istanbul Municipality, organized prototype project competitions to initiate this dialogue. These competitions aimed to select the most suitable design for the institutions' mid-century social housing constructions. Since *social housing* did not yet exist in the terminology of the period, they used the term *low-cost houses* (French *habitations à bon marché*) in the competitions. In the context of the prototype project competitions, the institutions sought

proposals that were practical, modest, provided optimal comfort conditions, and, most importantly, had low construction costs. In this manner, they would have projects they could use by duplicating in the low-cost housing areas they developed.

Türkiye Emlak Kredi Bank announced the first prototype project competition in November 1948. The announcement invited Turkish architects to submit proposals for the design and construction of low-cost housing at Levent (Akşam, 1948). Aru and Gorbon (1952), the designers of the first phase of Levent, asserted that construction of the houses commenced in 1947, with the inaugural sales transactions occurring at the end of 1949. In 1948, the Bank organized a competition for the same area, paving the way for constructing new phases in the Levent Neighborhood. Indeed, in the following years, Levent's second and third phases were built, comprising detached and row houses. The competition concluded in January 1949 (Table 1), with the first and second prizes selected from 42 projects in various categories (Cumhuriyet, 1949).

Mimarlık magazine, issued by the Turkish Architects Union, published the competition results (Mimarlık, 1949). Among the competitors, the team consisting of Hakkı Uras, İzzet Aydınoglu, and İlhan Bumin came into prominence with four prizes, and the team consisting of Orhan Safa, Abdullah Sarı, and Ruhi Kafescioğlu, members of Istanbul Technical University (ITU) Faculty of Architecture, with three prizes. Upon examination of the promotional brochures for the second and third phases of Levent, it became evident that the constructed houses were not among the prized designs in the competition (Figure 1). The partnership of architects Hakkı Uras and Demirtaş Kamçıl was responsible for the design of the master plan for the relevant phases. Additionally, Hakkı Uras served as the chief controller of the construction of Levent Neighborhood (BCA, 143.67.15). Given that Uras was a member of the team awarded in the competition, this undoubtedly contributed to his following tasks for the project.

Table 1. The award-winning designers in the prototype project competition of Türkiye Emlak Kredi Bank.

Organizing Institution: Türkiye Emlak Kredi Bank

Submission Deadline: 1949, January 3

Jury Members: Sinan Mimaroğlu (*Architect, Ministry of Public Works*)
 Orhan Alsaç (*Engineer, Turkish Engineers Union*)
 Mithat Yenen (*Architect, Turkish Architects Union*)
 Reşat Mütevellî (*Engineer, Türkiye Emlak Kredi Bank*)
 Nurettin Evin (*Engineer, Türkiye Emlak Kredi Bank*)

Category	Prize	Designers
Two-room House	First	Neriman Birce, Kemal Ülkümen, İlhan Bumin
	Second	Hakkı Uras, İzzet Aydınoglu, Adnan Unaran
Three-room House	First	Orhan Safa, Abdullah Sarı, Ruhi Kafescioğlu
	Second	Hakkı Uras, İzzet Aydınoglu, Adnan Unaran
Four-room House	First	Hakkı Uras, İzzet Aydınoglu, Adnan Unaran
	Second	Orhan Safa, Abdullah Sarı, Ruhi Kafescioğlu
Four-room, Double Unit House	First	Recai Akçay, Mukadder Çizer
	Second	Rıza Aşkan
Five-room, Single-story House	First	Orhan Safa, Abdullah Sarı, Ruhi Kafescioğlu
	Second	Hakkı Uras, İzzet Aydınoglu, Adnan Unaran
Five-room, Two-story House	First	Eyüp Asım Kömürcüoğlu
	Second	Neriman Birce, Kemal Ülkümen, İlhan Bumin

Law No. 5656 on the Addition of the Municipal Law came into force, authorizing municipalities to construct low-cost housing. Istanbul Municipality organized an architectural competition to determine the prototype projects of social housing production under this legislation. The Municipality announced the competition in May 1950 but did not disclose the precise location of the construction sites to avoid any speculation (*Yeni İstanbul*, 1950). A newspaper article published during days of competition mentioned that municipal architects were designing projects for constructing low-cost houses (*Cumhuriyet*, 1950a). While the Istanbul Municipality organized a competition, it also engaged in an in-house design process. The results of the competition were announced in June 1950. The jury selected the first, second, and third prizes (Table 2) in the competition organized in three categories (*Milliyet*, 1950). 55 projects participated in the

competition, and it is noteworthy that Ali Terzibaşoğlu, a young ITU Faculty of Civil Engineering member, won the first prize in two categories. An article published in *Arkitekt* magazine offered a scathing critique of the competition's outcomes. Özdoğan et al. (1950) commenced their analysis by enumerating the essential characteristics of a low-cost house and proceeded to identify and critique the shortcomings of all the prized projects. Indeed, the Municipality ignored the competition outcomes when determining the final projects for the low-cost houses. They preferred the design of municipal architects Leyla Turgut and Sahip Özden for the prototype projects of Selamsız and Koşuyolu Low-Cost Houses (van den Broek, 1964).

After the competitions were open only to professionals, the daily newspaper *Yeni İstanbul* initiated a competition for students enrolled in architecture programs to identify type low-cost

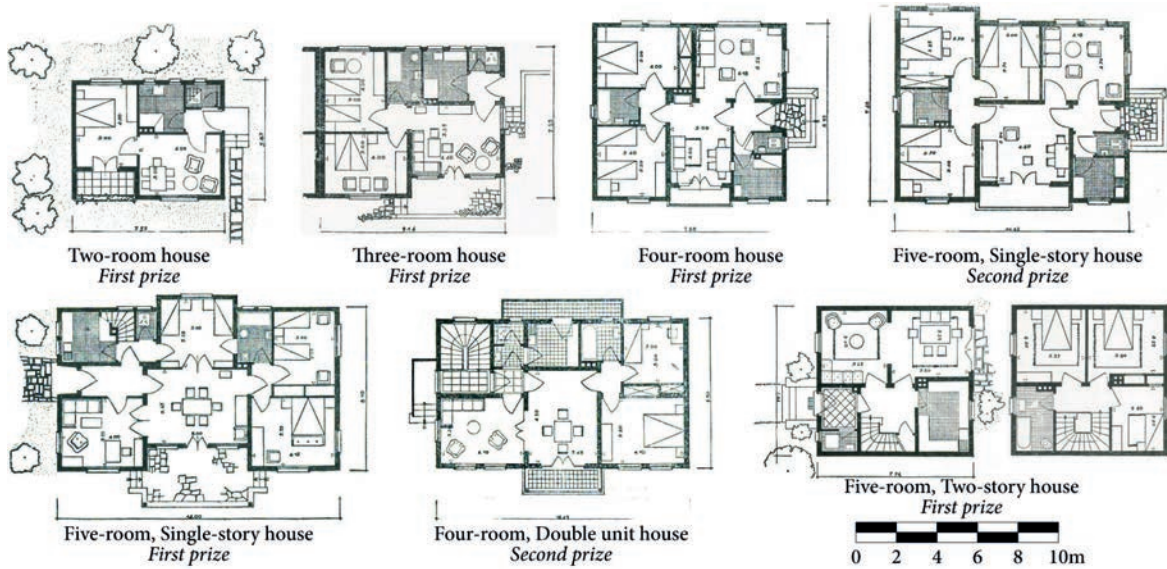


Figure 1. Floor plan drawings of award-winning prototype projects (Exhibition Catalog of Türkiye Emlak Kredi Bank, 1951).

housing projects. The competition, organized in collaboration with the newspaper management and the Association of ITU Faculty of Architecture Students, was first announced in January 1952 (*Yeni İstanbul*, 1952a). Although no location was provided to the participants, they were instructed to conduct a study according to the directions. In March 1952, the competition ended with 20 participant projects (*Yeni İstanbul*, 1952b). Although not explicitly stated, it appeared by the jury members and award winners (Table 3) that the competition was organized only exclusively for students affiliated with the ITU. The team, comprising fourth-grade students Metin Hepgüler, Ergun Evrenol, and Noyan İlmen, attained notable success by securing both the third prize and an honorable mention.

4. Master plan competitions

In the mid-1950s, the struggle against the housing problem gained momentum. While the Türkiye Emlak Kredi Bank and the Istanbul Municipality continued their efforts, social housing production increased with the housing cooperatives. As the construction of Levent and Koşuyolu facilitated the production of detached and row houses, the Bank introduced a new typology with the construction of apartment blocks. Atatürk Boulevard, representing one

of the urban images related to the period's modernization approach of the Historical Peninsula, was the Bank's initial choice to construct the attached apartment blocks (*Arkitekt*, 1957). Subsequently, the fourth phase of Levent encompassed both detached buildings and apartment blocks. Güvenç and Işık (1999) stated that the Bank's most significant investment until that period was the purchase of Baruthane land in the vicinity of Bakırköy. The Bank's proposal entailed the construction of a housing estate for approximately sixty thousand individuals on this land. The Bank's management board resolved to conduct a competition among Turkish architects to guarantee the optimal realization of the Baruthane land development project (Güvenç & Işık, 1999). They announced the Baruthane master plan competition in July 1955. The announcement indicated that the design of the 450-hectare Baruthane land, according to urban planning principles, was the focus of the competition. Furthermore, it was also stated that the competitor candidates may procure the relevant specifications and accompanying documents from the Bank's branches (*Cumhuriyet*, 1955a). Bern and Røe (2022), a wide range of stakeholders in shaping the competition brief and defining the requirements

Table 2. The award-winning designers in the prototype project competition of Istanbul Municipality.

Organizing Institution: Istanbul Municipality		
Submission Deadline: 1950, May 29		
Jury Members: Prof. Mukbil Gökdoğan (<i>Architect, Istanbul Technical University</i>) Henri Prost (<i>Architect & Urban Planner, Istanbul Municipality</i>) Hüsnü Keseroğlu (<i>Engineer, Istanbul Municipality</i>) Prof. Sırrı Bilen (<i>Architect, Fine Arts Academy of Istanbul</i>) Abdullah Türkmen (<i>Engineer, Turkish Engineers Union</i>) Mehmet Ali Handan (<i>Architect, Turkish Architects Union</i>)		
Category	Prize	Designers
Two-room House	First	Ali Terzibaşoğlu
	Second	Ferruh Akarcalıoğlu
	Third	Fatin Uluengin, Bedri Kökten, Ayhan Aytöre
Three-room, Single-story House	First	Ali Terzibaşoğlu
	Second	Harbi Hotan
	Third	Rahmi Çetinkaya
Three-room, Two-story House	First	Abdurrahman Hancı, Sabahattin Lim
	Second	Lami Eser, Gündüz Özdeş
	Third	Ahmet Pekelmen

Table 3. The award-winning designers in the prototype project competition of Yeni Istanbul.

Organizing Institution: Yeni Istanbul Newspaper		
Submission Deadline: 1952, March 10		
Jury Members: Prof. Kemal Ahmet Aru (<i>Architect, Istanbul Technical University</i>) Prof. Orhan Safa (<i>Architect, Istanbul Technical University</i>) Prof. Orhan Arda (<i>Architect, Istanbul Technical University</i>) Zeki Akdamar (<i>Manager, Yeni Istanbul Newspaper</i>) Altan Öke (<i>Association of ITU Architecture Students</i>)		
Prize	Designers	
First	Suat Sümer, Güngör Kaftancı	
Second	Agop Bel	
Third	Metin Hepgüler, Ergun Evrenol, Noyan İlmen	
Honorable Mention	Metin Hepgüler, Ergun Evrenol, Noyal İlmen	
Honorable Mention	Adnan Atalay	

would improve the process to help create outcomes in architectural competitions. It is worth noting that the jury, mainly composed of professionals such as architects and engineers, prepared a comprehensive specification for the Baruthane master plan competition. In the

18-article specification, attention was requested to the boundaries of the land and to utilize the area to the maximum extent. Following the principles of modern urbanism, the proposed buildings had no height limitations. Designing the coastal area as a modern tourist area, placing

a station on the suburban line, and a pier on the coast to provide access to the city were also requirements. The accompanying documentation comprised a 1/5000 scale master plan, a 1/5000 scale survey map, and a 1/2000 scale survey map with four sheets. The jury commenced its examination of the participating projects nine days after the submission deadline (*Cumhuriyet*, 1955b).

The competition results were announced in November 1955 (Table 4), and among the 12 participating projects, the first, second, and third prizes and four honorable mentions were selected (*Cumhuriyet*, 1955c). The team comprising Gündüz Özdeş and Kenan Akınay, two young academics from the Urbanism Department of ITU Faculty of Architecture, were awarded first prize. Despite the competition organized for the Baruthane master plan and the determination of award-winning projects, the board of management of Türkiye Emlak Kredi Bank reached the decision not to commence with the construction

of any of the prized projects and not to commission any of the competitors for planning works. The jury supported this decision and recommended the establishment of a private planning bureau for the Baruthane initiative to formulate a comprehensive plan that effectively synthesizes the most promising concepts from the competing proposals (Güvenç & Işık, 1999). The Bank established the aforementioned private planning bureau and the team developed the master plans for the Baruthane settlement (Baturayoglu Yöney, 2018).

Another competition about the Baruthane settlement was organized in March 1957. The Bank held this competition to select a name for this new settlement during the master plan works with the contributions of Italian professor Luigi Piccinato, who had also participated in the development plans of Istanbul in the 1960s (*Cumhuriyet*, 1957). The jury members for this unconventional competition included notable figures such as Istanbul Mayor Fahrettin Kerim Gökay, journalist Safa

Table 4. The award-winning designers in the Baruthane master plan competition of 1955.

Organizing Institution: Türkiye Emlak Kredi Bank

Submission Deadline: 1955, October 18

Jury Members: Sedat Eroğlu (*Architect, Istanbul Municipality*)
Ertuğrul Menteşe (*Architect, Istanbul Municipality*)
Prof. Kemal Ahmet Aru (*Architect, Istanbul Technical University*)
Adnan Kuruyazıcı (*Architect*)
Orhan Alsaç (*Architect, Istanbul Municipality*)
Cevat Erbel (*Architect, Istanbul Municipality*)
Prof. M. Ali Handan (*Architect, Fine Arts Academy of Istanbul*)
Emin Canpolat (*Architect, Chamber of Architects*)
Zahit Mutlusoy (*Engineer, Chamber of Engineers*)
Cemil Topçubaşı (*Architect, Türkiye Emlak Kredi Bank*)
Mithat Erçetin (*Engineer, Türkiye Emlak Kredi Bank*)

Prize	Designers
First	Gündüz Özdeş, Kenan Akınay, İsmail Pınarer
Second	Şahap Aran, Haluk Baysal, Radi Birol, Melih Birsal, Sedat Gürel, Abdurrahman Hancı, Maruf Önal, Faruk Sırmalı, Suha Toner
Third	Melahat Topaloğlu, Ali Topaloğlu, Bülent Berksan
Honorable Mention	Abdullah Ardalı, Alp Çetinsu
Honorable Mention	Ahmet Kısmet, Settar Parsa, Fikret Cankurt
Honorable Mention	Orhan Tolon
Honorable Mention	Gazanfer Erim, Sema Seyrek

Prize for sheltering: Architectural competitions and displaying the social housing production in mid-century Istanbul

Kılıçoğlu, Cemal Kutay from the Bank, and celebrated literary figures of the period, including Falih Rıfkı Atay, Abdülhak Şinasi Hisar, and Ahmet Hamdi Tanpınar. The competition concluded in November 1957, and Asım Kozan from Istanbul won the first prize (*Milliyet*, 1957). The Baruthane settlement has been known as Ataköy since that date, thanks to Kozan's accepted proposal.

The 1960 *coup d'état* significantly impacted the country's daily life and the pace of social housing production. During this period, the Bank only continued the construction of Ataköy phases and built the Retired Officers' Houses in Zincirlikuyu. In contrast, the Istanbul Municipality concentrated on modernizing the Historical Peninsula, which commenced in the mid-1950s. Following the expropriations and subsequent demolitions, Vatan Avenue was opened to vehicular traffic in the early 1960s, but the surrounding areas remained undeveloped (Figure 2). Türkiye Emlak Kredi Bank initiated a master plan competition for this sizeable urban space. The rationale behind the Bank's involvement was that it shared ownership of the area with the Social Insurance Institution and Istanbul Municipality. Accordingly, representatives from

all three institutions served as advisors to the jury. As observed in the Baruthane competition, competitors also demanded the design of housing and commercial areas (*Milliyet*, 1966). The entire area on Vatan Avenue, situated between the current Fatih Municipality building and Alparslan High School, was within the scope of the competition. The competition concluded in March 1967 (Table 5), awarding first, second, and third prizes, three honorable mentions, and two purchase prizes (*Milliyet*, 1967).

Arkitekt magazine published the jury report of the competition, drawings, and scaled-model photographs of the awarded projects (*Arkitekt*, 1967). Thirty-four projects participated in the competition, and the project designed by architects Birol Obuter, Taneri Alpay, and Güner Özdoğan, who graduated from ITU Faculty of Architecture in the early 1960s, won the first prize. The jury determined that the central expression of the project in terms of its plastic in the commercial zone and the organization of the service traffic was quite successful. Nevertheless, the fundamental conduct of the masses in the housing area and the internal transportation network did not attain a comparable degree of success (*Arkitekt*, 1967).

Table 5. The award-winning designers in the Vatan Avenue master plan competition of 1967.

Organizing Institution: Türkiye Emlak Kredi Bank

Submission Deadline: 1967, February 6

Jury Members: Prof. Kemal Ahmet Aru (*Architect, Istanbul Technical University*)
 Prof. Tuğrul Akçura (*Architect, Middle East Technical University*)
 Prof. Muhteşem Giray (*Architect, Fine Arts Academy of Istanbul*)
 Ahmet Menderes (*Architect, The Bank of Provinces*)
 Prof. Doğan Tekeli (*Architect, Istanbul Technical University*)

Prize	Designers
First	Birol Obuter, Taneri Alpay, Güner Özdoğan
Second	Ercüment Bigat, Alpay Aşkun
Third	Misket Baydargil, H. Avni Çakmak, Saltuk Baydargil
Honorable Mention	Gönül Aslanoğlu
Honorable Mention	Refik Şenvardar, Hüseyin Kaptan, Yılmaz Tosun
Honorable Mention	Oktay Uzel, Kamil Bayur
Purchasing	Atilla Arpat
Purchasing	Kemal Güngör Aran, Mehmet Doruk Pamir

Despite the perception of shortcomings in the housing area of the projects, the designers persisted in their efforts and ultimately concluded their proposals into a final project (Özduman et al., 1972). The competition site was a sizable urban space, yet only a limited part became a subject of the construction phase; the Bank only built the residential area on the northern edge. In the early 1970s, a mass housing development comprising 353 condos was constructed in this area, and the first prize-winning architects designed it. However, significant disparities emerge when comparing the proposals submitted to the competition with the realized projects.

5. Displaying the struggle against the housing problem

The mid-century housing crisis was not an issue only confined to Turkey; but a global phenomenon. During World War II, construction stoppages and demolitions significantly reduced the housing stock of European cities. The confluence of the same problem in numerous countries created an opportunity to pool resources and

expertise, facilitating collective action and advancing shared solutions. The international professional organizations of the period facilitated the opportunity for country representatives to share their housing production works at the exhibitions they scheduled. While Europe was motivated to reconstruct its cities after the war demolitions, Turkey was driven by a need for the controlled expansion of cities that experienced population growth due to internal migration. Türkiye Emlak Kredi Bank, the leading figure in the country's social housing production, participated in these exhibitions and showcased its housing initiatives. The most significant international organization in which the Bank was involved during the mid-century was the Izmir International Fair. Architect Tuğrul Devres designed the Türkiye Emlak Kredi Bank pavilion, and the Bank exhibited the housing projects it has been producing across the country at the fair (*Arkitekt*, 1951). The exhibition included project drawings, scaled models, and photographs of the Levent and Koşuyolu Neighborhoods in Istanbul.



Figure 2. Aerial photograph of the Vatan Avenue in 1959 (Directorate of General Mapping Archives) and first prize-winning master plan (Arkitekt, 1967).

Prize for sheltering: Architectural competitions and displaying the social housing production in mid-century Istanbul

Furthermore, the Bank prepared an exhibition catalog for distribution to visitors at its pavilion. In addition to the array of advertising images of the Bank, the catalog also included various housing plans. Among the 25 prototype projects presented were examples of detached and row houses, as well as prototype projects from the first phase of Levent and the Selamsız and Koşuyolu Low-Cost Houses developed by the Istanbul Municipality. Additionally, the catalog included a selection of prized projects in the competition organized by the Bank in 1948. Some prototype projects were enhanced with perspective drawings prepared by Bedri Kökten.

In 1952, the Bank's pavilion at the Izmir International Fair hosted a more comprehensive exhibition. Austria, Belgium, Brazil, Finland, France, India, Israel, Italy, the Netherlands, Pakistan, Sweden, Switzerland, Turkey, the United Kingdom, the United States, West Germany, and Yugoslavia participated in the International Housing Architecture Exhibition. The assembled nations showcased various case studies exemplifying their contributions to the settlement of populations, particularly after World War II. The exhibition posters published in *Arkitekt* magazine show that Brazil, Netherlands, and Switzerland constructed multi-story apartment blocks. In contrast, Israel and Turkey constructed single or double-story housing units (*Arkitekt*, 1952). The Bank revised its catalog from the previous year and redistributed it to this exhibition.

In 1962, Türkiye Emlak Kredi Bank participated in another significant international exhibition. That year, the International Federation for Housing and Planning (IFHP) convened its 26th World Congress in Paris. The Turkish government appointed Mithat Yenen and Enver Ergun from the Ministry of Public Works to represent the country at the congress (BCA, 165.35.15). Mithat Erçetin, Ertuğrul Menteşe, and Nur Sefa Tekyeliban from Türkiye Emlak Kredi Bank also participated in organizing the Turkish section of the exhibition opened on the occasion of the congress. The involvement of the Bank's personnel in organizing the ex-

hibition at the IFHP World Congress demonstrates that the content of the national section is related to the Bank's operations. A literature review reveals that only Yenen (1962) mentioned the organization of this exhibition and the Bank's participation, and therefore, no detailed information could be found. It seems reasonable to posit that a multilingual catalog prepared by the Bank in 1962 was published for distribution at this exhibition. The Bank presented a series of texts, plans, and photographs in the exhibition catalog that introduced social housing production from its foundation until 1962. The catalog includes housing construction projects in Diyarbakır, Manisa, Adana, İzmir, and Ankara, as well as Koşuyolu, Levent, Ataköy, and the Retired Officers' Houses projects in Istanbul.

6. Discussion

Pyatok (1993), an architect with experience in social housing competitions, mentioned the gap in competition between the real needs of lower-income groups and the imaginative but impractical ideas of idealistic designers. He argued that competition is most effective if the project gets built off and the ideas generated get wide distribution. In this context, the organizations conduct successful competition processes but are generally unprepared to implement the winning solutions. Finally, he suggested that real estate developers must be included from the start to facilitate social housing construction. The gap between the real needs and the idealist designer's approach was evident in the criticism of the prototype project competition in 1949. Özdoğan et al. (1950) articulated the proposals that lacked entrees, exhibited aesthetic inconsistencies, and incorporated useless elements such as skylights. The assertion that institutions were unprepared to build social housing cannot be claimed for the Istanbul case, as all of the housing that was the subject of professional competition has already been built. However, none of them used the competition's output. It seems reasonable to posit that this was related to Pyatok's suggestion. Notably, no real estate developer was involved

in any competition process. The jury, comprising representatives from professional organizations, academics, and senior civil servants, prized the proposal deemed most appropriate in theory. The absence of a developer with the experience to translate the design into a tangible project was evident in the social housing competitions of mid-century Istanbul.

The organization of competitions for the prototype projects in the early period of social housing production and for the master plan designs for large urban areas in the following years demonstrates the intention of the responsible institutions to manage a participatory process. Ramberg (2010) observed that using architectural competitions as a tool in urban planning facilitates the exchange of ideas between diverse stakeholders. All but one of the architectural competitions examined within the scope of this study were organized with the specific intention of being utilized in the construction of housing developments. However, none of the social housing constructions have been realized following the outcomes of the competition. Although the Istanbul Municipality organized a competition for the type design of the low-cost housing it was built, it ultimately preferred to use the services of its in-house architects. One may reasonably conclude that the decision was motivated by negative critiques of Özdoğan et al. (1950) regarding the competition outcomes. In addition to these criticisms, the production process of low-cost houses was also the subject of various discussions held by the City Council of the Istanbul Municipality (*Cumhuriyet*, 1950b). In the end, they evaluate the options agreed upon by the public. Likewise, the projects awarded in the competition organized for the Baruthane/Ataköy master plan were not utilized in the area's development. There may be various reasons for this ignorance. The Türkiye Emlak Kredi Bank earmarked a significant portion of its budgetary resources for acquiring the Baruthane land. Implementing a more rigorously analyzed project to mitigate the risk associated with this investment would have been prudent. The lack of submis-

sions to the competition may have also prompted concerns about the viability of the prized projects.

The outputs of the prototype project competition organized by Türkiye Emlak Kredi Bank in 1948 for Levent's second and third phases were not utilized in constructing the houses. Nevertheless, the Bank included the drawings of the prized projects in the exhibition catalogs it published for distribution at the İzmir International Fair in 1951 and 1952. Hakkı Uras, who was part of the team that received awards in four different categories in the competition, collaborated with architect Demirtaş Kamçıl on the design of the master plans for the second and third phases of the Levent Neighborhood in the following years. He also served as the chief controller of its construction. Although the competition projects were not directly built, it seems probable that Uras had made contact with the Bank, the developer institution of Levent, through the competition. The Bank's competition for the development plan of Vatan Avenue in 1966 represents the sole instance in which the designs of prized architects were subsequently constructed. This competition's jury determined that the commercial areas of the first prize-winner project were prosperous; however, they also identified deficiencies in the design of the housing areas. In the subsequent period, the Bank constructed only the housing components of the project, not the remaining elements of the master plan. The prized team's redesigned project for Vatan Avenue Apartment Blocks introduced a new approach to mass housing in Istanbul through an architectural competition.

Architectural competitions conducted as part of the struggle against the housing problem were to facilitate the production process; however, various factors prevented this from occurring. The organization of competitions in response to a societal issue has prompted the early engagement of architects and civil engineers with the housing problem. Rey-Rey (2019) described architectural competitions as an extraordinary tool for promoting equal opportunities and providing young talents with access to projects

of great relevance. Indeed, the analysis of the cases revealed that younger professionals received more awards in the competitions. Those architects who initiated efforts to struggle against the housing problem at the outset of their careers and received awards for their design proposals played a pivotal role in subsequent social housing production in Istanbul (Figure 3).

As previously stated, Hakkı Uras was responsible for conceptualizing and designing Levent's second and third phases. Haluk Baysal and Melih Bırsel, who were members of the team that received second prize in the Baruthane master plan competition, designed the Hukukçular Sitesi project for a housing cooperative in the early 1960s, introducing a local manifestation of the International Style to Istanbul. Gül (2017) stated that this apartment complex draws formal inspiration from Le Corbusier's Unité d'habitation and

represents a significant design achievement, comprising 66 condos in three distinct types. A member of another team secured the third prize in the same competition, Bülent Berkşan, was responsible for designing the social housing units of the Military Solidarity Institution (OYAK) and the First Army Housing Cooperative in the northern section of the Levent Neighborhood during the late 1950s. In an atmosphere where young architects received awards in prototype project competitions, Yeni İstanbul Newspaper spearheaded a competition open to students, which brought the architect candidates of the period into the struggle against the housing problem. Güngör Kaptancı, the recipient of the first prize in the competition, was a member of the team that designed the labor houses of the Feshane Sümer Housing Cooperative in Eyüp. Awarded third prize and an honorable mention, Ergun Evrenol

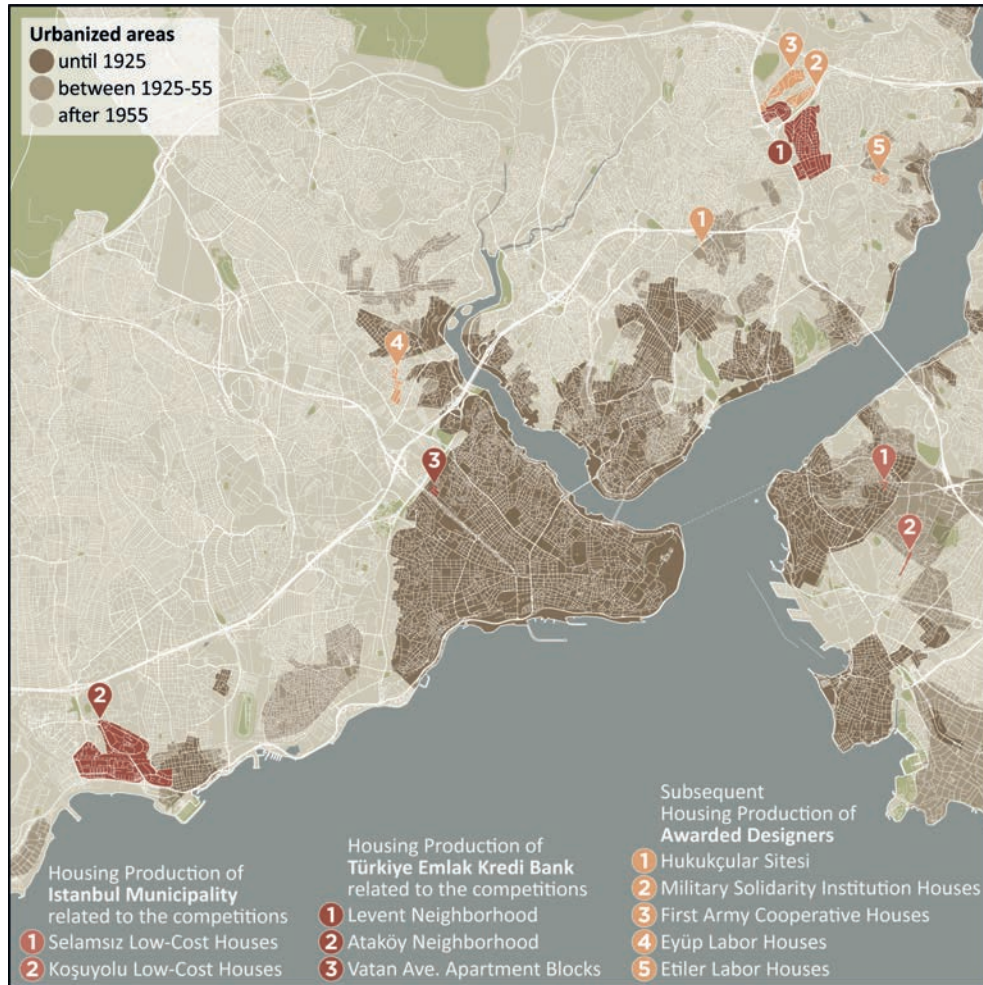


Figure 3. Istanbul map showing the areas related to competitions and subsequent production of awarded designers (Authors, 2024).

prepared the projects of two housing groups, one consisting of row houses and the other of apartment blocks in Etiler for the Şişli Bus Garage Labor Housing Cooperative. In addition to those who contributed to housing production, an architect who participated in the mid-century competition process subsequently prepared academic studies on the subject. Altan Öke, a jury member representing the student union in the type plan competition organized in 1952, became an academic at ITU Faculty of Architecture after graduation. His contributions to the field of affordable housing production included the publication of two seminal works: "Use of Economic Elements in Housing Construction" (1967) and "Housing Design in Terms of Business Approach and Budget" (1971).

The 1948 and 1950 prototype project competitions revealed a growing interest in adopting a multi-participatory approach to social housing design in Istanbul. The high level of participation in both competitions, with approximately 50 projects submitted, indicates that the professionals of the period were engaged with the subject matter. The 1955 Baruthane master plan competition was open to all architects and civil engineers across the country, yet only 12 projects were submitted, which was surprisingly low. Given the extent of the competition, the search for the design of the residential settlement

with the surrounding touristic areas rather than the housing project itself may have contributed to its lack of popularity because the scope of work conducted by local architects and engineers at the urban scale was relatively constrained during this period. The 1966 competition for the master plan of Vatan Avenue, like the Baruthane case, sought to create a comprehensive urban design incorporating residential areas and the planned commercial and public spaces. In the decade that has elapsed since the previous, urbanism has become an increasingly prominent feature of the architectural agenda, and this competition has attracted more participants, with 34 proposals submitted (Figure 4).

Participation in international exhibitions is as crucial as organizing architectural competitions in the social housing production process. The incorporation of diverse perspectives on constructed examples proved to be a valuable addition to the process, as did the pursuit of recommendations about the design of the proposed projects. Many countries participated in international exhibitions, as the issue was a global concern. Türkiye Emlak Kredi Bank made its inaugural appearance on the international stage at the 1951 İzmir International Fair. The design of a unique pavilion structure illustrates the significance attached to this matter, functioning as a tangible representation

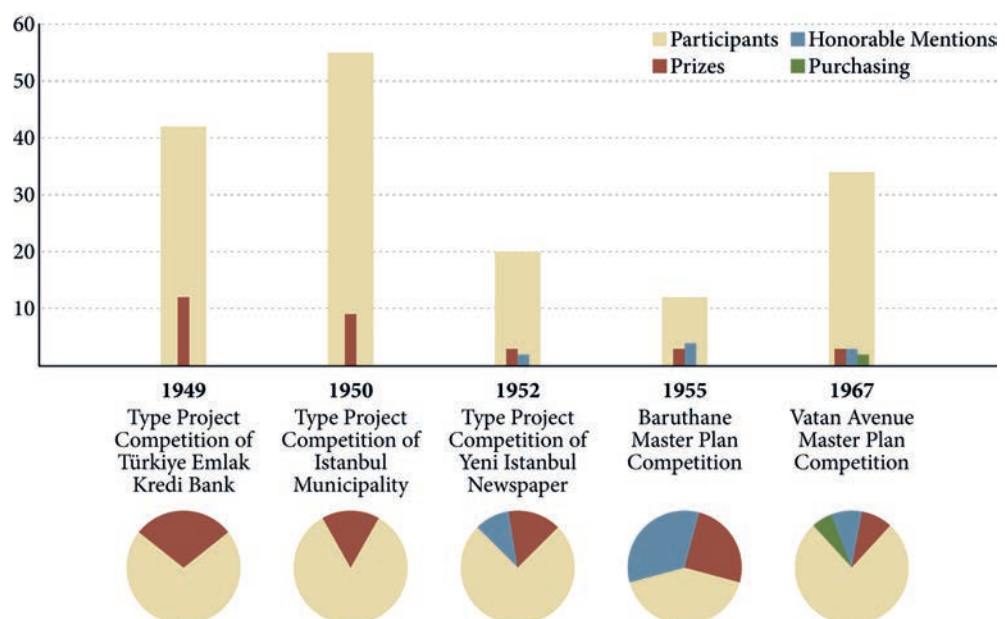


Figure 4. Graph showing the ratio of prizes in competitions (Authors, 2024).

Prize for sheltering: Architectural competitions and displaying the social housing production in mid-century Istanbul

of the underlying concept. The following year, the International Housing Architecture Exhibition, held once again in the same pavilion, allowed professionals in Turkey to examine housing production activities on a global scale. In particular, the construction of housing in the apartment block typology in most countries has been a significant driver of local production. The Bank's commencing construction of the first model, the Atatürk Boulevard Apartment Blocks in Istanbul, a year after the international exhibition, is undoubtedly a consequence. The exhibitions have made a significant impact on the social housing production process. Its contributions include recognizing standard production methods globally and initiating local experiments, which are invaluable contributions that cannot be overlooked.

Furthermore, the exhibition catalogs distributed to visitors serve as printed remembrance of the country's struggle with the housing problem (Figure 5). They provide a comprehensive overview of the Bank's housing production since its establishment. In the article introducing the Türkiye Emlak Kredi Bank pavilion, it was stated that the exhibition catalog was an innovation of the Bank and a means of advertising its recommendations on housing production to the public (*Arkitekt*, 1951). On the other hand, many award-winning proposals from the 1948 prototype project competition were also included in the catalog, thus enabling the

examinations of successful projects. Similarly, the 1962 Paris exhibition catalog contains information on the Bank's housing production during the initial 15 years of its existence. Also, it serves as a repository of early, original photographs of the constructed cases. A couple of years after the exhibition, van den Broek (1964) undertook a comprehensive study of housing production in developing countries and included data from the Bank's exhibition catalog in the chapter on Turkey. It seems reasonable to posit that he used the Paris exhibition catalog to prepare this chapter.

7. Conclusion

Identifying the risks associated with unplanned urbanization and the emergence of unhealthy generations in mid-century Istanbul highlighted the pressing housing problem. The pioneering efforts commenced following the determination of the problem. The observations and contributions of foreign professionals facilitated international collaboration in the context of the struggle. Compared to Istanbul's present circumstances, it might be assumed that these endeavors have yet to yield the desired outcomes. However, the city's inherent tendency towards uninterrupted expansion in terms of its physical dimensions should be noticed. These pioneering initiatives began social housing production in the early



Figure 5. Exhibition catalogs of Türkiye Emlak Kredi Bank (Authors archives).

1950s. Furthermore, architectural competitions constituted a significant aspect of the production process. It is commendable that young designers receive awards that address the housing problem at the outset of their careers. The competition organized by the *Yeni İstanbul Newspaper* also involved the architecture students of the period in the struggle. This study demonstrates that the impact of architectural competitions extends beyond the development of prototype projects and master plans for the social housing production in İstanbul. Indeed, the awarded designers of these competitions subsequently participated in producing numerous social housing units constructed in İstanbul in the following years. In light of these circumstances, it is evident that these competitions catalyzed the architectural community to address the housing problem.

In mid-century İstanbul, social housing units subject to architectural competition were constructed despite the ignored results. Levent Neighborhood, the first social housing project of *Türkiye Emlak Kredi Bank* in İstanbul, expanded its boundaries by constructing the second and third phases in the post-competition period. In the mid-1950s, it reached its current boundaries by implementing the fourth phase, designed by Kemal Ahmet Aru. Initially conceived as a satellite city on the periphery of the urban core, Levent underwent a significant transformation with the city's expansion along the northern axis, becoming an essential center in its own right. In the wake of another competition spearheaded by the İstanbul Municipality, one of the projects in question led to the development of an idle cemetery in Selamsız. Subsequently, this area became a settlement comprising approximately 200 houses, which was made possible by the construction of housing cooperatives. Similarly, another development in the same scope, Koşuyolu, has become one of the most valuable modern neighborhoods on the Anatolian side, with the houses built by cooperatives and, in particular, by the Bank, which took place in three phases. Following the Baruthane master plan competition, which saw a relatively

modest number of participants, a private planning bureau was established on the recommendation of the jury and planned the Ataköy Neighborhood with the consultancy of Luigi Piccinato. In the period preceding the enactment of the Law No. 634 on Flat Ownership, the neighborhood comprising multi-story apartment blocks was at the vanguard of mass housing not only in İstanbul but throughout the country. The Bank proceeded with construction in phases until the 1980s, when Ataköy evolved from a neighborhood to a subprovince. In comparison, the Vatan Avenue Apartment Blocks played a pivotal role in the evolution of social housing architecture during the 1970s. Their strategic location within the heart of the Historical Peninsula, original design, and innovative mass movements significantly contributed to the urban landscape. The settlements, which functioned as subjects for architectural competitions, have endured to the present day, albeit with various interventions. These housing groups are products of modern architectural heritage, with their merits and values. Subsequent research should prioritize identifying risks and threats that hinder the preservation of this modern housing heritage. A range of intervention methods should be determined, and conservation projects should be developed to ensure the survival of houses without ignoring the changing living habits due to developing technology. These conservation proposals can occur through architectural competitions, similar to the approach utilized during production. On the other hand, the international exhibition of production strategies for addressing the housing problem proved invaluable in critical analysis from diverse perspectives and in tracking global developments. The exhibitions organized or participated by the Bank constituted an opportunity to introduce the local concept of social housing to professionals from various countries. The catalogs prepared within the scope of these organizations also constituted a source of information for international publications, thereby facilitating the dissemination of the country's strategies for struggling against the housing problem.

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Reconstitution of the memory: Renovation of the Alsancak Cigarette Factory

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Abstract

In parallel to the evolution of the extents of conservation discipline, the place has been the prior subject regarding its historical, architectural, symbolic, and social values. Heritage places that create bonds between past and future and links between societies and their environments forefronts as a reaction to change and forget. Due to the bonds that are created by experiences, feelings, and witnesses, heritage places turn into memory places. However, regarding the changes in their urban and social environments, the meaning of these places transforms and reforms as the objectives of remembering and forgetting, power and disgrace, glory and loss. In this context, this study focuses on the creation and transformation of a memory place: the Alsancak Cigarette Factory, an urban reminder of the industrialization process and the socio-economic progress of the city. The factory, which was established in 1884 as a part of the industrial zone of Izmir, holds an important place in the collective memory in terms of tobacco production besides being a place of belonging for the employees and their families. After its closure in 2004, the factory remained idle and physically damaged, and its urban impact was weakened. In 2018, it was renovated as a cultural hotspot. With this study that defines the transformation process of the factory, the transformed meaning of the memory place, the impact of the intervention in this process and its new role in the urban identity is discussed.

Keywords

Collective memory, Heritage places, Industrial heritage, Memory place, Tekel Factory.

1. Introduction

In a world of rapid transformation, the living cycle, shaped by the pace of life, brings admirable innovations in science and technology while also posing risks due to the changes in our life routines and spatial expectations. The transforming life that reshapes expectations, aesthetic pleasures, and attitudes toward experiencing the physical environment has been an interdisciplinary discussion in the context of culture-space relations. These changes affect not only the collective but also the personal identities, and cause the weakening and even annihilation of the links between individuals and their environments. In order to overcome the risk of annihilation of identity, heritage places and their resilience comes to the forefront.

Heritage places are the traces of the past, a reaction to change and forget. Besides, they symbolized as the objects of power. As Silberman (2016, p. 33) states, government-protected heritage places become civic rituals while these cultural assets are renovated as commemorative places as symbols of a communal identity. Within the attempts of officializing heritage places, they become the representatives of a chosen past while becoming instruments to push one's history to the front or push it to the back to be forgotten. In other words, heritage places become crucial to create bonds to the past and to reproduce it as the roots of the future of societies. At this point, the phenomenon of memory stands out.

Connerton (2014) defines memory as a reconstruction of history, while Halbwachs (2017) points out its timelessness and interprets it as a reconstruction of the past and the future. Besides, the ability to constitute images, experiences, and rituals specific to each society helps to stabilize and convey that society's self-image (Assman, 1995). Thus, memories always need the present, a current image, or a place to reproduce the past (Sarilo, 2012) and the anticipated future.

The interrelation between the concepts of memory and place covers sensible links between place and society and also refers to the relation between

memory and experience. Considering the fact that each person's ideas and perceptions on a particular subject may vary; the cultural norms, expectations and pleasures, values and dislikes, and meaning differ from the other in any place. Brook (2000) states that the meaning of place is formed by the subjective perceptions of individuals shaped by cultural norms such as myths, beliefs, stories, and historical narratives, besides attitudes such as authentic, local, useful, and characteristic. In a similar vein, Cresswell (2014) defines the place as a location that shapes our minds with its loaded meanings. The unique experience of a person or a society related to a place and the meaning of it transforms into a memory that reminds the significant feelings, emotions, acts, and cultural past.

The perception of the place and the creation of memory are not only related to experience but also to the cultural background of the individual and the social, economic, and physical dynamics in which she or he lives. Pointing out the dynamic structure of the concept, Casey (1987) claims that memory is a way of redefining the past through each and every experience, and therefore each recall process creates a new memory.

Regarding the impact of the cultural environment, the process of remembering and forgetting is another key concern in the interrelationship of place and memory. According to Kamhi (2013), memory is a personal archive based on the dialectic of remembering and forgetting, unaware of their transformation and constant reconstructions. In this regard, place can be used as a tool to lead society by recalling memories and experiences or creating new ones to forget the existing ones. Places that cover the artificial reminders or activities of current ideologies are strengthened by the images of these memories. In cases of a change of ideology, memory is recreated by organizing the place to be a venue for new experiences, producing new memories, and making society forget the previous experiences.

In this context, this study focuses on the transformation of a memory place, an industrial heritage place (Alsancak

Cigarette Factory) in Izmir which renovated as a cultural centre. Through the analyses on the transformation of this memory place, the article will seek answers to the following questions:

- What are the impacts of the reuse implementation on the urban role and the architectural character?
- Does the implementation strengthen the place identity and its role in the collective memory?
- Does the implementation improve the perceptibility and the meaning of the heritage place?

Depending on the aim and questions of the inquiry, the first step of the study is focused on the historical process of the place. Through the analyses on the urban role and the reorganized spatial order of the place, sustainability of the character and continuity of the meaning are to be examined. After then, the public consciousness and the perceptivity of the heritage components are examined. Depending on the findings of the inquiries and the interviews with the former and today's users, tools of remembering and the forgotten values are defined, while the transformed meaning of the place is questioned.

2. Methodology

The article investigates the transformation of the urban role, the character, the meaning, and the perceptibility of the memory place through a qualitative research method. To achieve this, the physical features such as the urban environment, the pattern of the campus of the Alsancak Cigarette Factory, and the architectural character of the buildings are analyzed. Besides, depending on the literature, the historical process of the heritage place is defined.

In parallel with the physical and historical features of the memory place, the social impact and the awareness related to the former meaning are questioned. To evaluate the intrinsic value of the factory as a memory place, a structured questionnaire was conducted. The questionnaire started with the inquiries to elicit demographic information from the participants to question the relation between the level of awareness and the age, gender, and affiliation. Following these, the aware-

ness of the participants to the history of the factory, its former and current functions, and spatial opportunities were questioned. Through the conducted questionnaires and the in-depth reviews, personal memories associated with the site, subjective attributes such as values, likes, and dislikes, the characteristic details they could recall from the factory's original state, and the impact of the restoration on participants' perceptions and recollections were decoded. Besides, through the identification of the participants, the characteristic details of the renovated place that echoed remnants from the original form were questioned. Concluding the questionnaire, participants were invited to express their ideological stance on the preservation of the factory's historical identity. Referring to the obtained data of the inquiries and the interviews, the transformed meaning, the tools of remembering, measures of the user satisfaction, and the perceiving continuity of the memory place are discussed.

Finally, the effect of the renovation implementation on the perceptibility of the authentic essence of the memory place is defined. Referring to the possible reverse impacts of the renovation implementations, a pivotal inquiry seeks to discern the deliberate act of 'forceful forgetting' by neglecting or marginalizing the traces of the collective memory or "an improved remembering" by highlighting the compounds of the memory and the unique features of the heritage. By identifying and comprehending the factors contributing to the cultural sustainability of the memory place, this research aims to proactively address the risks inherent in preservation endeavors and provide a foundation for formulating preventative measures within the discipline.

3. Constitution and transformation of the place

In parallel with the significant impacts on the trade, economy, and industrialization processes of the Ottoman Empire, the trade network had also been a significant factor in the transformation of the city of Izmir. The developments in maritime trade of the 19th century transformed Izmir

into a port city, while the coastal zone (Cordon) and the social structure were reconstructed. Moreover, the advancement of industry led to a shift in trade towards industrial products, contributed to the development of the city through import-export activities, and played a crucial role in the urbanization of the city.

The construction of railways that began in 1864 caused the fade of the traditional commercial zone and altered the urban layout. In parallel with the heightening impact of the Aydın railway and its central station in Punta, the construction of docks that occurred between 1867 and 1875 was a significant development not only for the trade capacity but also for the reformation of its surroundings (Köksal, 2018). Due to the need for industrial energy, the first gas company in Izmir was established in 1860. In 1892, a Belgian company installed a turbine alternator and a Kesstner boiler in the Daragaç area to meet the city's electricity demand. The commercial, industrial, and spatial development of the late 19th century led to the reorganization of the surroundings of Punta and the construction of the industrial zone of the city (Çetinkaya, 2015, pp.57-60). In this period, various structures such as the electricity factory, gas factory, ark industry, and cigar factory were established.

Besides the changes in the trade networks all over the Mediterranean, the agricultural product range of West Anatolia and the transportation opportunities were among the key factors in the transformed identity of the city of Izmir. The expansion of the railway network, which enabled a strong connection between the city and its surrounding provinces, led to an increase in the external trade of agricultural products. The key products of the region were grape, fig, and oak, while tobacco production was becoming one of the fundamental export products of the Ottoman period and kept its importance in the early republican period (Demir, 2019, pp.427-439).

Tobacco made its entry into Anatolia in the 1600s alongside foreign sailors and traders, and its economic impact kept on rising till the 19th cen-

tury (Çelik, 2016). With the increase in tobacco processing and cigarette production, Izmir became one of Turkey's significant industrial centers in the second half of the 19th century. The expansion of the railway network penetrating the city from Alsancak and Basmane Stations supported exports and made a significant contribution to Izmir's economy (Parlapan et al., 2023). Therefore, tobacco industry played a crucial role in Izmir's urban memory and the development process of that memory.

Regarding the administrative and financial impasse of the Ottoman Empire, the control of the tobacco trade as well as all the other financial tools of the Empire was granted to the Reji Administration, a consortium of the Ottoman Government and the representatives of Western countries. With an agreement signed on January 10, 1883, the government transferred the management of the tobacco and salt monopoly, along with all tax and sales revenues derived from tobacco, to the Reji Administration for a period of 30 years. Accordingly, the first two factories were established in Istanbul and Izmir in 1884, while two others were established in Adana (1885) and Samsun (1887).

Unfortunately, the granted authority led to exploitation of peasants and tobacco workers in the Reji capital, the taxes of the merchants were increased, and the gap encouraged tobacco smuggling (Öztürk, 2023). Though the Reji Administration established its own gendarmerie to prevent smuggling, violent conflicts erupted between producers and this organization, which resulted in fatal incidents and left significant marks on the tobacco history of the region (Yurtoğlu, 2021). On the other hand, the Reji administration developed the sales of Turkish tobaccos in western markets such as Germany, the Netherlands, and Denmark (Figure 1). In the first quarter of the 20th century, the increase in the importance of the Anatolian tobacco led to its worldwide recognition under the name Oriental Tobacco or Turkish Tobacco, and the global recognition of Izmir as a universal cultural benchmark (Peksüslü et al., 2012, pp.83-89).



Figure 1. Advertisement for Regie cigarettes (left, Orhun, 2024) and the cigarette box of the Selam Cigarette. (right, Powerhouse Collection)

3.1. Directorate Of Reji

Due to the formation of the industrial zone of the city, the Izmir Cigarette Factory was established on the southern edge of Punta Station in 1884 (Öztürk & Keskin, 2013, pp.94-97). Regarding its location, which is also quite close to the port and other industrial structures of the city, and the spatial quality of the campus, the cigarette factory played an important role in the social and economic development of Punta (Şimşek, 2006).

Despite its negative effects on the socio-economic structure of the empire, the privilege granted to the Reji administration continued until the establishment of the Republic of Turkey in 1923. Regarding the basic policies covering political, economic, and cultural independence that were implemented, the tobacco regime was nationalized in 1925. Due to the aim to manage agriculture, industry, and foreign trade from within the country and to allow the working classes to make choices against all ideological illusions, the Tobacco Monopoly was purchased from the Reji Administration, and all rights and obligations were transferred to the state (Nalçacı, 2023).

3.2. Reorganisation of the place and creation of the memory:

Alsancak Tekel Cigarette Factory

Despite the very strong worldwide impact of the industrial revolution, it had a weak impact on the Ottoman Empire. However, regarding its technological, social, cultural, and economic dimensions,

industrialization was taken as one of the prior goals in the Republican Period. The industrial structures were seen as a tool for the newly established state to get rid of economic dependency, and industrial facilities were built in many parts of Anatolia. Cigarette factories are among the important parts of this policy.

In the early years of the Turkish Republic, tobacco was not only one of the main export products but also one of the pioneers of industrialization, independence, and development policies of the country. However, with the 1929 economic crisis, there was a significant decline in agricultural production. In order to find ways to protect the traditional export products and to support producers, tobacco congresses were held in 1932 and 1934 (Yurtoğlu, 2021). Established in 1935, the General Directorate of Tekel was formed as a state institution to operate, manage, and prevent smuggling of state monopolies. This provided assurance regarding tobacco usage, production, and sales among the public, contributing to the development of the Tekel Industry. Moreover, through this institution, laborers, workers, and civil servants attained significant positions within the sector and nationwide (Köksal, 2018).

For the workers and civil servants who worked at Tekel for many years, the institution was not just a source of livelihood but also a significant memory space. They spent much of their time on the campus of the factory and had a say in their work areas. Moreover,



Figure 2. Above: Female tobacco workers of Tekel in the foreign press (Doğruel & Doğruel, 2000); Below: Cigarette boxes of Tekel (Gökçe Auction, Dec.2024; Gökçe Auction, Jan.2024; Bitmezat, Dec.2024)

regarding the social policies of the republic, employing women was a prior aim (Figure 2). In 1928, two-thirds of the total workforce consisted of women (Öztürk & Keskin, 2013, pp. 94-97). Thus, in addition to the importance of Tekel Factory within the economic structure of the republic, it was also a memory space that needed to preserve and transmit the feelings of trust, ownership, and uniqueness experienced by the citizens.

As Tekel factories are reorganized across the country, Alsancak Cigarette Factory has also restructured as a part of Tekel and took a leading role in Izmir's urban history and also in the development of storage functions around the port area (Karadağ & İncedere, 2020). Alsancak Tekel Cigarette Factory was a complex with an extremely important urban location on the main axis that directs the modernization process of Izmir. It was located adjacent to the historical Punta Train Station (Alsancak Train Station), which opened Izmir to the world economy and culture. Within the modernization and industrialization process of the Republic, the factory campus was

enlarged with the depots, technical units, and social spaces such as a dining hall and a nursery (Figure 3). The existence of the campus fabric, which is located between the highway and the railway, was highlighted with the main entrance gate and its significant sign. The Tekel sign that faces one of the main arteries of Alsancak has been an urban reminder not only for the staff of the factory and their families, but also for the citizens. Regarding the preservation strategies of the 1970s and the urban role of the campus, the factory complex was registered as a cultural asset in 1979, and the preservation status was defined by the Preservation Board decision taken in 1985.

By the late 1990s, within the economic policies of the government, the privatization process of the governmental facilities was begun, and the production capacity of the factories was decreased. In 2003, it was stated that permission should be obtained from the board for any physical intervention, functional change, or zoning application on the campus. With this decision, the campus was protected for its function within Tekel (Köksal,



Figure 3. Izmir Tekel Tobacco and Cigarette Factory / Entrance Courtyard. Above: Before and after 1929 (Köksal, 2018, p.69). Below: 1960-1980 (Erol Şaşmaz archive, 2014)

2018). Though the production capacity and the urban role of the factory were weakened, the production activities continued until 2004 (Gökşen et al., 2021). Following the cessation of its activities, Tekel was abandoned, and the complex fell into ruin. This situation diminished its impact on the collective memory of the city, rendering it occasionally recognizable only by its signage. The privatization process, which ended in 2008, left Tekel empty and unusable. Despite the obsolescence and disuse process of the factory, its legal preservation status played a significant role in the preservation of the complex until today (Gökşen et al., 2021).

In 2004, the alcohol department of Tekel's factories across the country was transferred to the consortium. With these privatization efforts, two factories in Şanlıurfa and Kırıkkale were closed after the tender, while eight more factories were closed in Ankara, Çanakkale, Diyarbakır, İstanbul, İzmir, Ürgüp, Yozgat and Acıpayam (Kencsoy, 2023). After the activities were stopped, the Alsancak Tekel Factory was abandoned, and the complex fell

into disrepair. This decline has reduced its impact on the collective memory of the city, sometimes making it recognizable only by signs. Tekel's nationwide cigarette division was sold to British American Tobacco in 2008. Following the sale, cigarette factories in İstanbul, Adana, Bitlis, Malatya and Tokat were closed, and only the Balıca Factory remained operational (Kencsoy, 2023).

3.3. Transforming the factory into a cultural place

In 2005, the Alsancak Tekel factory complex was allocated free of charge to the Ministry of Culture and Tourism for use in cultural services. This decision marked the initial phase of the concept of repurposing the area as a cultural facility. In 2007, the protection status of the complex was recorded as a Group 2 Cultural Asset, and it was deemed appropriate to change the zoning plan without objections to the functional transformation (Köksal, 2018). The privatization process, which concluded in 2008, rendered Tekel's warehouses unusable, leaving them empty and abandoned. Despite the

factory's liquidation and subsequent disuse, the legal protection status has played a crucial role in preserving the complex to the present day (Gökşen et al., 2021).

During this period, issues such as the new function of the factory, method of renovation, and user group were under discussion. Alongside the central administration who owned the property, local authorities, associations of architects and urban planners, and academia were involved in these discussions. In line with this, a project proposing the conservation of the factory into an educational campus was presented to the committee in 2008. Köksal, who prepared an academic/scientific preliminary report in 2008, stated that the factory contains original details and materials, and it is still in a better state of preservation (Köksal, 2018). However, despite numerous meetings with relevant institutions, the project proposing the renewal of the factory complex as an educational campus could not be implemented due to the failure to obtain the approval of the regional Heritage Preservation Board.

In 2014, due to the decision of the Heritage Preservation Board, the 1/1000 scale zoning plan was changed, and the preservation approach related to the factory was reformulated as simple and comprehensive maintenance and repair. Regarding this, some interventions, such as the removal of the unqualified additions and the repair of the roofs of the two buildings facing the city, began. Unfortunately, the intervention stopped unfinished, leaving the buildings exposed to adverse nat-

ural conditions and causing significant damage (Köksal, 2018). The process of abandonment and the unsuccessful preservation attempt not only caused physical damage but also led to a decrease in the awareness of the factory as a memory place while causing the significance and value of the complex in the city and collective memory to diminish.

In 2018, another project was prepared for the renovation of the factory. The restoration project prepared by E-S Construction and Lift Architecture proposed to refunction the factory as a cultural center: Izmir Culture and Arts Factory. Far from the life of a production facility, the campus has turned into a cultural hotspot with its exhibition halls, libraries, workshop spaces, and a recreation area with the food and beverage venues (Figure 4).

Within the intervention, the main production building was renovated as an ethnography museum, while the warehouses were renovated into an art museum and a restaurant, workers dining halls were converted into conference halls, and work areas were converted into temporary exhibition spaces (Figures 5-7). However, these transformations caused some spatial fictions and also the annihilation of original traces. As the traces of the production activities, such as machines and other objects, were removed and no visual or audial information elements were used, the link of remembering has not been achieved. Despite the original meaning of these spaces as the integrated parts of the whole production activity, they now turned into more idle spaces that can be used and



Figure 4. Functional layout, Left: Before 2008, Right: 2025

perceived in fragments, and partially used spaces. The renovation of the factory also changed the original layout of the space and completely changed the life of the site. As the factory campus hosts new activities and experiences, spatial memory of the site is about to be transformed and reshaped.

Despite the new function of the factory, a collection that recalls the former life of the site is presented in a limited part of the exhibition (Figure 8). Within the halls of the Etnography Museum, some equipment, samples of the products, and photographs are exhibited. Unfortunately, considering the content of the collection and the spatial impact of it within the exhibition, this collection is far from providing information about the life and production process of its period.

4. Transformation of the meaning and the traces of memory

The transformation of the factory has not only affected the utilization and spatial values of the site but also the meaning and the traces of the memory. In order to decode the transformed meaning of the factory, questionnaires and indept reviews with 66 people from different ages have been made. Five of the participants were at the age of 18 and below, while 36 were between 18 and 35, and 25

were at the age of 35 and above. The findings of the inquiry pointed out the intricate interconnections between age, historical awareness, and evolving perceptions of the factory. As expected, a linear relationship has been observed between familiarity, emotional commitment, and age. It is obvious that participants over the roughly age of 35 have emotional bonds with the place and its former function, while the young ones (18–25) who were born after the dereliction of the factory are more likely to be acquainted with the current urban role as a cultural center. The interplay between participant age, historical progress, and the dual phases of the factory—abandonment and subsequent restoration—underscores the complexity of memory and perception. Older ones provide a valuable link to its historical past, while younger ones prioritize the spaces of the revitalized cultural center.

The survey data reveals a noteworthy balance in participants' exposure to the former state of the factory. Expectedly, while those acknowledging firsthand encounters have a better understanding of the factory's evolution over the years, the ones who experienced the former state recognize the building as a cultural center. The duality of perception of the community underscores the evolving nature



Figure 5. Main entrance and the iconic plague: Above: Main Entrance of site, Left: 2014 (Erol Şaşmaz archive), Right: 2025; Below: The current location of the original plague

Reconstitution of the memory: Renovation of the Alsancak Cigarette Factory



Figure 6. Then and Now: The Production Building / Etnography Museum. Up & Middle-left: Lift-Es Construction archive in Köksal, 2018; Below-left: Doğruel & Doğruel, 2000, fig.23

of the cultural space in the absence of direct historical engagement. Besides, responses to the questions related to the original function of the factory reveal a lack of awareness. The majority of responses (43/66) show that the citizens recognize the site as “Tekel” or “Tobacco Factory,” while only a small group (2/66) is aware of the original identity of the site and recognizes the building that faces the city as “regie administration building” (Figure 9). Furthermore, a small minority (3/66) responded to the question as “oil production” or “governmental ironworks,” which was categorized as misinformation, and 18 of them declared that they have no idea. These responses point out a notable gap in the awareness of the citizens related to the history of the site and highlight the need for elucidating historical information surrounding the factory. As the responses varied to this inquiry, roughly a quarter of the

participants indicated their absence of information. With this, there were also small minority responses that were unfortunately. Responses taken as incorrect information covering views on the factory’s original use have included different usages such as “oil production” or “governmental ironworks.” The prevalence of such responses underscores the existence of misconceptions and the lack of historical information.

The inquiry also aimed to define the citizens’ memories related to the site and its urban role (Figure 10a). A substantial majority (45/66) of the responses reported a lack of personal memories connected to the factory, while some (13/66) put forward limited interactions with the factory, such as walking by its boundaries or perceiving the building through its urban facades, and some (8/66) present memories directly connected to the spaces of the factory. The quoted memories



Figure 7. Then and Now: Up: Offices & Production Building, 2018(Lift-Es Const. archive) / Atelier&Museum, 2025; Below: Warehouse, 2018(Lift-Es Const. archive) / Restaurant, 2024



Figure 8. The Old Tekel Memory Room and the collection.

vary from personal experiences with the spaces of the factory to parental connections, such as visiting the family member working there during the active years of the facility. The memories associated with the active years

of the faculty highlight the meaning of the site as belonging, collaboration, and safety. On the other hand, many of the responses (5/13) that were taken as “limited interactions” were connected to the abandoned years of the

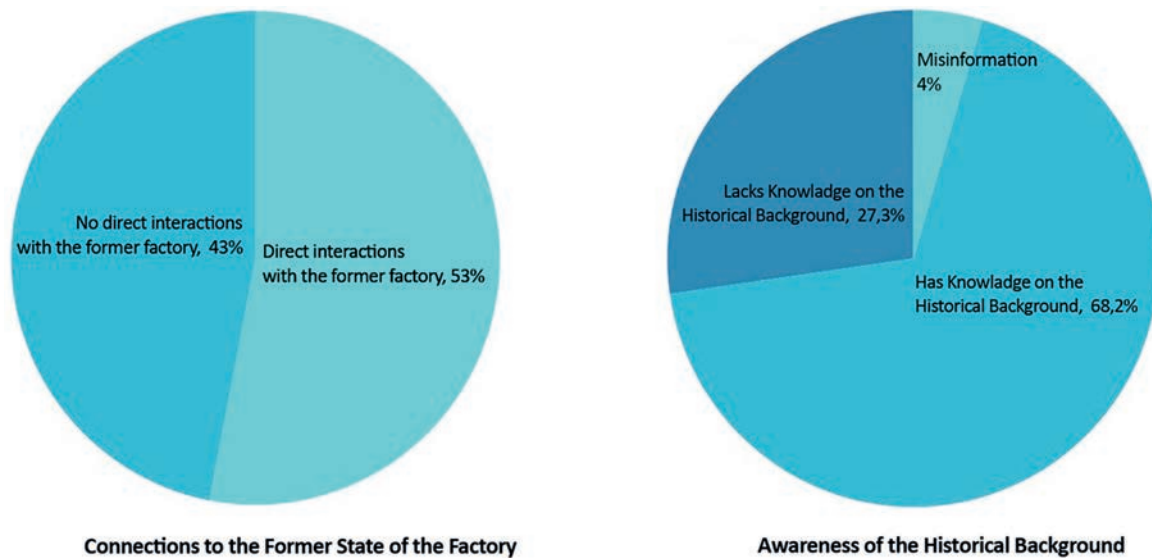


Figure 9. Public awareness regarding the history of the site.

factory and marked the place as unfair, dangerous, and unsecured. These nuanced experiences shed light on the multifaceted nature of the factory's impact on the citizens and the effect of the urban role in the creation of memory. Furthermore, the memories from the abandoned period introduce a temporal dimension, revealing not only positive feelings but also the challenges and negative perceptions associated with specific periods in the factory's history.

Another aim was to decode the awareness related to the architectural value of the site. A significant portion of the responses (34/66) revealed a notable absence of awareness regarding the architecture and the characteristic details of the factory. Conversely, a much smaller portion of responses (15/66) provided clear descriptions and details regarding characteristic features of the campus. Noteworthy among these were the expansive size of the factory and the stone garden walls crowned with steel fencing, while the most distinctive and recognized aspect of the factory is remarked as the steel signboard located at the main gate bearing the corporate identity of Tekel. On the other hand, a minor portion of responses (17/66) recalled the abandoned years of the factory and highlighted its deserted state surrounded by the intense urban environment. Although these responses pointed out the state of being neglected and emphasized the impact of time on the factory, the common recollection regard-

ing the steel signboard was stated. This unravels that, regardless of the level of awareness and remembering, the "Tekel" signboard is the most prominent feature of the factory in the collective memory of the citizens' (Figure 10b).

The findings of the inquiry also put forward the user's remarks related to the renovation implementation, the new use, and the reminders of the memory place (Figure 10c). Through the responses, it became evident that a significant majority had indeed visited the factory after the renovation implementation. A noteworthy group consisting of students and researchers highlighted their periodic visits for their academic studies, as the new cultural center provided an ideal environment to study and research. Despite the user's satisfaction related to the study places, a majority (28/66) express their difficulty in naming the specific feature of the current state of the place. This remark underscores the fact that the renovation had transformed the space into an educational hub and weakened the perception of the factory as an industrial heritage site. The rest of the responses (32/66) provided feedback appreciating the modern additions to the site, including the museum, library, and cafes, among the admiration for the landscaping. However, even the answerers of these responses revealed a lack of understanding regarding the industrial past and the original identity of the site. It is evident that the new functions and amenities have effec-

tively overshadowed the recognition of the limited unique features of the industrial heritage site, even less some expressed their dissatisfaction and worries regarding the annihilation of the industrial character of the place. It is also remarkable that all the remarks regarding the weakening industrial character of the place corelated with the removal of the iconic “Tekel” signboard, which further underscores the value of the signboard as the characteristic feature of the factory and the significant reminder of the memory place.

Despite the responses underscoring the lack of reminders of the historic industrial character of the place, a smaller but significant portion of responses (18/66) asserted that the volumetric forms of the buildings indicate resemblances to the original place. However, these assessments overlook the demolition of worker houses that occurred prior to the restoration efforts and show the lack of historical knowledge related to the spatial features of the site. Besides, the inability to discern the historical traces within the current structures of the factory underscores the disconnection between the current and the original state of the place.

Lastly, the responses regarding the remembrance and the perception of the original state of the factory displayed a notable divergence among the participants. A roughly quarter of the responses (16/66) expressed their pleasure about the implementation and underlined their preference for focusing on the contemporary and functional aspects of the site rather than its historical features. However, almost the rest of the participants (47/66) prioritized the preservation and remembrance of the original state of the factory, emphasizing its unique values and historical significance. Besides, a small group (3/66) reported that the current state of the factory already sustains sufficient similarity to the original state, negating the need for additional measures and preservation efforts. To sum it up, the varied responses emphasize the complexity of the opinions of the community regarding the remembrance and preservation of the original factory (Figure 10d). The differing perspectives contribute to the broader discourse on

the balance between historical preservation and adaptive reuse, reflecting the diverse attitudes towards the significance of industrial heritage in the context of evolving societal priorities.

5. Conclusion

Historical structures are important not only for their architectural and historical value but also as reminders of past lives and experiences. Historical industrial buildings, in addition to their role in reminding us of the advancements in knowledge, technology, and production systems, also draw attention with Tekel their reflections on socio-economic development. In this context, the Alsancak Tekel factory, as a reminder of the industrial and socio-economic development of Izmir, has been one of the memory places of the city.

Within the transformation process of the Alsancak Tekel Cigarette Factory and its urban environment, the physical environment of the factory and the experiences they offer have produced spatial memories regarding the industrialization and modernization process of the city of Izmir. Regarding the questionnaires and the in-depth reviews that were conducted with 66 persons, the traces of the heritage place in the urban memory of the citizens and the retention of the place memory have been disclosed.

The findings of the inquiries point out that the renovation implementation that transformed the abandoned site into a cultural center strengthened the environmental impact of the factory and recreated its urban identity. It is certainly understood that due to the abandonment of the factory, the heritage place has been forgotten or even not known by the citizens. However, the renovation and re-functioning have transformed the site into an urban core and created awareness.

In the framework of the continuity of architectural value of the factory and the preservation-utilization balance, the renovation of “Alsancak Cigarette Factory” stands as a commendable achievement. The endurance of the integrity of this historical place and the strengthened environmental impact and utilization values are the causes for

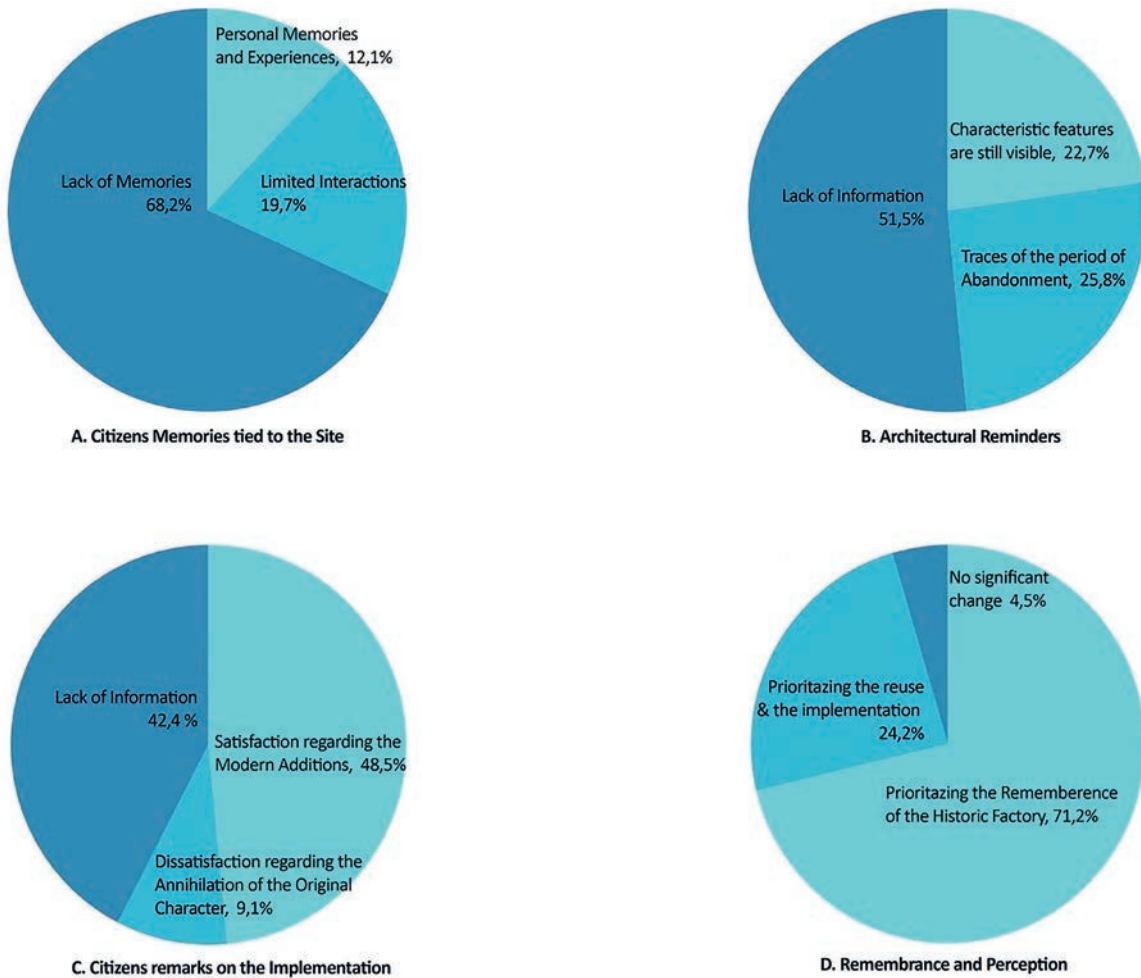


Figure 10. Citizens' memories related to the site (10a) & architectural reminders (10b), Citizens' remarks on the implementation (10c) & the remembrance of the character (10d)

gratitude. The adaptability of the factory to serve contemporary needs reinforces its relevance as a living heritage place, ensuring its continued contribution to the cultural and educational life of İzmir.

On the contrary, the socio-cultural dynamics of the present day cast an undeniable shadow over Alsancak Tekel Cigarette Factory as a memory place with traces in the collective memory. As generational shifts unfold, the intrinsic connection to the bygone era gradually fades and the memories once embedded within the factory become increasingly elusive. The spaces that once bore witness to these memories now exist in an altered state, lost and indiscernible within the contemporary framework. Besides, due to the annihilation of the reminders that weakened the links between the collective memory and the place, the memory space has been damaged, lost its original quality,

and transformed. As a result, despite the strengthened environmental value of the site, the meaning of the factory as a memory place of the cities' past and the reminder of the historical industrial production of it has been forgotten.

The participant statements underlined that the youth, as the major group of current users who have been untouched by the historical nuances of the old factory, lack the shared experiences that defined its original state. Unfortunately, the renovation implementation seems to have overlooked the imperative to preserve the intangible aspects of the factory. Although some significant reminders, such as the iconic plague and the equipments, have been preserved and presented to the visitors, the location and presentation of these assets are not sufficient to understand the historical value of the place or to perceive them as the prima-

ry components of the heritage. It may be assertive to evaluate the renovation approach as a deliberate act of forceful forgetting, but it is possible to take it as a lack of intentional remembering.

Today, there seems a risk to perceive the site as a cultural area produced by the renovation of a historical complex rather than a memorial space that recalls a specific period of the city, the industrialization efforts, and the socio-economic structure of its time. Urgent and deliberate actions are imperative to rectify this trajectory, ensuring that the factory's legacy endures not merely as a restored structure but as a living testament to the shared history and cultural heritage of İzmir. The challenge lies not only in preserving the physical remnants but also in actively cultivating a collective consciousness that cherishes and perpetuates the memories intrinsic to the factory's original state.

Addressing the issues surrounding the fading memories of the Alsancak Tekel Cigarette Factory and revitalizing its historical identity is still to be achieved with relatively straightforward approaches. It is crucial to enhance the perceptibility of the industrial character and the corporate identity of the factory. The first step can be to relocate the iconic "Tekel" signboard to its original location rather than its current place, where it is so hard to be noticed and to enlarge the exhibition of the original facilities so far as possible. This singular act has the potential to serve as a powerful reminder and acknowledgement of the factory's rich history. Placing the signboard at the main gate would not only preserve the memories of those who have experienced the old factory but also serve as an educational beacon for the new generation, imparting knowledge about the site's historical significance.

It is also important to expand the collection of the original features of the industrial process. Besides, the original function of the buildings and the life they covered shall be informed by highlighting the original features, such as architectural elements, equipments, and materials, while informing about the transformation process through informative techniques like information

panels, photographs, testimonies, and documentaries.

By taking these decisive steps, the implementation can transcend its current limitations and actively contribute to the continuity of the factory's legacy. It represents an opportunity to bridge the gap between the historical and current states, fostering a deeper connection between past and present for both long-time residents who cherish the factory's history and newcomers who may be unaware of its industrial heritage value.

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How decisions are made: Urban and architectural transformations of a modern residential district in Baghdad (1958-2024)

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Abstract

The article identifies the main decisions, acts and processes that contributed to the development of a modern residential district of Baghdad, Zayouna, between 1958 and 2024. While the majority of existing literature on contemporary Baghdad focuses on traditional architecture, landmark buildings and planning documents prepared by foreign consultants, less is known about the urban and architectural transformations of its modern residential neighborhoods. The article addresses this gap by proposing an analytical framework that draws from the structuration theory of Anthony Giddens and investigates interaction between the top-down decision-making and bottom-up initiatives that led to transformations in house design and urban situation. The resultant model shows a shift in the orientation and character of these transformations: from the dominant role of top-down decision-making until the mid-1980s to the increasing impact of bottom-up initiatives due to the deteriorating economic situation and the weakened ability of state institutions to invest in housing and enforce regulations. The article is based on qualitative research conducted between January 2024 and March 2025 that included literature review, interviews with Iraqi experts in architecture and urban planning, and archival research.

Keywords

Baghdad, House design, Structuration theory, Top-down and bottom-up, Urban situation.

1. Introduction

The article examines the key decisions, acts and processes that shaped the transformations in house design and urban situation of Zayouna -- a modern residential district of Baghdad -- since its inception in the late 1950s till the mid-2020s. It addresses top-down decision-making by state institutions and bottom-up initiatives by residents, analyzing how these two interacted and the outcomes this interaction produced on the ground. The analysis is divided into three temporal periods, reflecting the historical events that shaped contemporary Iraq and had significant consequences for the urban development of Baghdad:

- 1. From the 1958 revolution till 1979;
- 2. From the beginning of 1980 war till the war of 2003;
- 3. From 2003 to the mid-2020s.

Such historical perspective allows to unpack the changing role of state and non-state actors in the shaping of Zayouna district in particular and modern residential districts of Baghdad in general. As such, the research addresses a gap in the existing literature that tends to focus on traditional areas of Baghdad (Al-Saaidy, 2020; Alamiri & Alzubaidy, 2018; Al Siliq, 2008), landmark buildings designed by Western and Iraqi architects (Isenstadt, 2001; Kulić, 2014; Kultermann, 1982, 1999; Marefat, 2008; Pieri, 2013), and planning documents prepared by foreign consultants (Bernhardson, 2008; Fathi, 1985; Marefat, 2007; Stanek, 2012).

To theorize top-down decisions, bottom-up initiatives, and -- most importantly -- their interaction and its role in shaping house design and urban situation of Zayouna, the article draws on structuration theory formulated by Anthony Giddens (1984). Central to his concept is the duality of structure understood as the mutual dependence of structure and agency, as they are instantiated in action. Here, the structure is based on rules -- that can mean both legislated laws and customary practices or routines -- and resources that can be either allocative (involve command over material objects) or authoritative (involve command over people) (Whittington, 2015, p. 111). Contrary to many earlier sociological concep-

tualizations, Giddens emphasizes that "structure is not equated with constraint but is always both constraining and enabling" (Giddens, 1984, p. 25). Agency, on the other hand, is a human capacity to "make a difference" through action. For Giddens, humans are "purposive agents," who have reasons behind their activities and can engage in intentional action. It is in the course of action that agents draw upon rules and resources that "are at the same time the means of system reproduction" (Giddens, 1984, p. 19). Importantly, as shown by Giddens, interaction between structure and agency that drives the continuous flow of action may result in both continuity of the social system and structural changes. While appreciative of human capacity for intentional action, he nonetheless recognizes that the exercise of agency often leads to unintended consequences that may then "form unacknowledged conditions of action in a feedback fashion" (Giddens, 1984, p.27).

Through its emphasis on practice and ability to connect structure and agency in the analysis, structuration theory has proven useful across disciplines and levels of inquiry -- from macro analysis of institutions to micro analysis of praxis (Whittington, 2015, p. 109). For example, Sumari et al. (2025) applied the theory to a study of climate change adaptation planning, investigating the interplay between national climate change governance -- understood as policies, laws and resource allocation schemes -- and community-based initiatives (Sumari et al., 2025, pp. 853-4). Fillion (2021, p. 256), on the other hand, used it to analyze how urban planners navigate between the pursuit of their self-defined ideas and agendas and the structural constraints of the institutional, political and economic contexts in which they work, as well as how tensions between the two are reflected in planning outcomes. This article adopts a different approach, analyzing the top-down decisions and bottom-up initiatives that shaped Zayouna district. The top-down decisions, or structure in Giddens' terminology, consists of rules -- i.e., planning documents, laws or building standards -- and resources understood as

the state's ability to enforce regulations (authoritative) and to provide housing solutions and the necessary infrastructure (allocative). Agency, then, is residents' capability to "make a difference" in the urban environment. Here, the interaction between such-defined structure and agency in the continuous "flow of action" is what produces urban and architectural transformations of the district (see Figure 1-A).

Many studies have argued for the development of methodologies that integrate top-down and bottom-up approaches to urban planning (El Asmar et al., 2012; Breuer, 2014; Pissourios, 2014; Semeraro et al., 2020; Jeličić et al., 2021), and participatory planning and design practices have become increasingly widespread worldwide since the second half of the twentieth century (Türken & Eyuboğlu, 2021, p. 169). In these types of solutions, it is the governance system -- be it national, regional and/or local -- that provides and sustains a framework for citizens to exercise some form of agency over the urban environment. Yet in many urban contexts -- such as Cairo (Shawkat, 2020, pp. 7-25), Homs (Mazur, 2025, p. 127) or Beirut (Bou Akar, 2018, p. 178), to cite examples from the MENA region -- the inability or weakness of governance systems to enforce regulations and mobilize resources for the implementation of housing policies leaves citizens with few options than to take matters in their own hands. This process can take form of community organizing for the provision of affordable housing or infrastructure

(e.g., Ibem, 2009, pp. 126-127), as well as what Asef Bayat called "quiet encroachment" meaning "noncollective but prolonged direct actions of dispersed individuals and families to acquire the basic necessities of their lives [...] in a quiet and unassuming illegal fashion" (Bayat, 2010, p. 45).

As this article shows, "quiet encroachment" captures the character of most bottom-up initiatives that shaped Zayouna. The structuration theory is especially useful for analyzing these processes given its emphasis on practice and its capacity to capture how the reality on the ground -- produced by residents' actions -- can influence structure (see Figure 1-B).

The article focuses on the case study of Zayouna district, officially listed as Al-Muthanna in the records of the Mayorality of Baghdad [1]. Zayouna is located in the northeast part of the capital, consists of five neighborhoods and covers an area of 660 hectares. The historical development of the district is analyzed based on relevant Arabic- and English-language literature and archival research at the Mayorality of Baghdad, Officers' Housing Cooperative Society in Zayouna, Municipality of Al-Ghadeer, which Zayouna is part of, and the Ministry of Planning. Like much other research on contemporary Iraq, the study suffered from gaps in documentary data that had been destroyed or otherwise permanently lost during subsequent wars and years of political turmoil. These gaps were addressed with expert interviews and field observations that were conducted

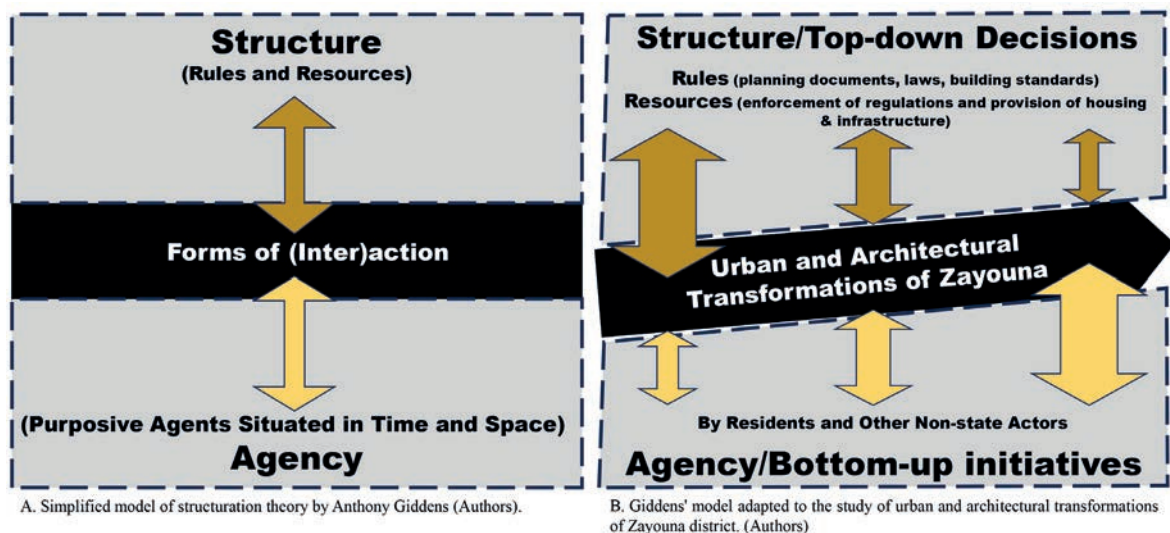


Figure 1. Theoretical framework.

How decisions are made: Urban and architectural transformations of a modern residential district in Baghdad (1958-2024)

in Zayouna district and documented in the form of notes, photographs and sketches. Between January 2024 and March 2025, the authors carried out sixteen expert interviews with Iraqi architects, planners and municipal employees (past and present). The interviewees were chosen following the purposive sampling strategy (Miles & Huberman, 1994, p. 27-28) that aimed to identify experts who are most knowledgeable about Zayouna district. Six of the interviewees were female and six, other than being experts on the urban development of Baghdad, were also past or present residents of the district. The interviews employed a semi-structured format in which respondents were asked a set of pre-prepared questions while being afforded the opportunity to provide open-ended responses. The responses were recorded either in the form of notes or audio-recording, with informed consent of the participants, and then transcribed. All interviews were fully anonymized according to the ethical standards for qualitative research in sensitive contexts (Fontana & Frey, 1998, p. 70). In line with methodological understanding of expert interviews (Döringer, 2021, pp. 266-267), the analysis focused on experts' knowledge about the urban and architectural transformations of Zayouna.

2. Urban and architectural transformations of Zayouna between 1958 and 1979

The origins of Zayouna district go back to 1955 when the Iraq Development Board commissioned the Greek architect and planner, Constantinos A. Doxiadis, to prepare a housing program for the country, with a focus on its capital (Pyla, 2008, pp. 3-6). In this program, Doxiadis proposed three types of housing projects for Iraq -- urban, rural, and "special" (Doxiadis Associates, 1959, p. 507) -- with Zayouna district planned as one of the special projects in Baghdad. The 1958 revolution marked a shift in the governmental system, from monarchy to republic (Sluglett & Sluglett, 2001, pp. 49-51). However, the need for new residential developments remained of clear importance to the new authorities, which led to both

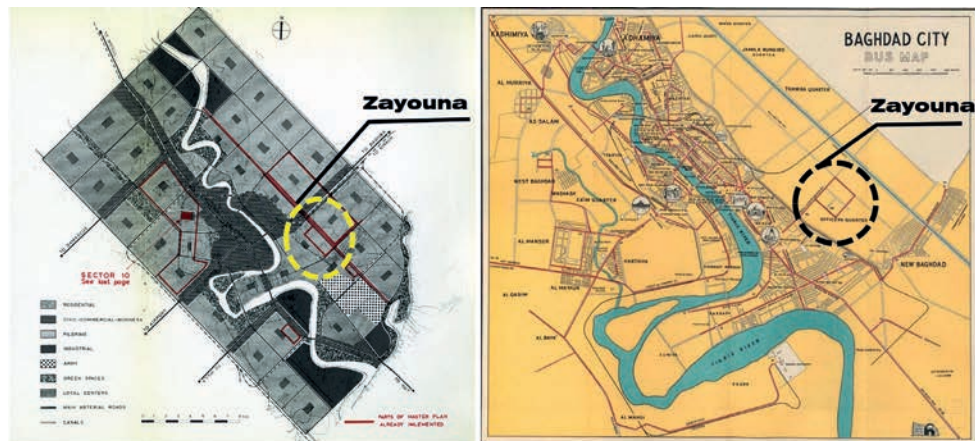
the continuation of projects that predated the regime change and new investments. According to the initial plan by Doxiadis, the "special" housing project in Zayouna was meant for military officers. The first planned area of the district was built with typical houses and the remaining land was distributed to officers as plots through the Housing Cooperative Societies [2]. As such, it was an example of the general state policy whereby the cooperatives were organized according to the profession of their members leading to creation of the Doctors' District, the Engineers' District, the Officers' District and the like (Nooraddin, 2004, pp. 77-78; Raouf, 1984, pp. 340-345). The following section analyzes these two main state interventions that shaped Zayouna between 1958 and 1979 that is solutions based on Doxiadis' work in Iraq and the policy of plots distribution through Housing Cooperative Societies.

2.1. Doxiadis' work in Iraq

While there are no official documents confirming that the design of Zayouna district was prepared by Doxiadis Associates (DA), it was indicated by most of the interviewed experts and can be inferred from at least two sources. First, the general layout of Zayouna district is visible in the Master Plan of Baghdad presented by the DA in 1958 (Theodosis, 2015, p. 168). Second, the DA bulletin published in 1960 shows Zayouna as one part of the Master Plan that had been implemented (Pyla, 2019, p. 102). Marked with red line in Figure 2-A below, the implemented parts include the Western Baghdad Development scheme, a small area south of it and three adjacent areas in Eastern Baghdad. Few references to eastern parts of the city found in the archives mention an upper-income neighborhood located at the southwest of the Army Canal (i.e., Zayouna) and a low-income community situated at the northeast (i.e., Thawra City, nowadays known as Sadr City). Zayouna was probably one of the last projects developed entirely by the DA in Iraq (Theodosis, 2015, p. 180). Within Baghdad, the three types of housing projects -- rural, urban, and special --

were meant to provide accommodation according to socioeconomic class of its residents, i.e., creating low-class, middle-class and high-class neighborhoods. According to that, there were two districts of high-class housing assigned to officers of the Iraqi army in Baghdad, Zayouna or “Officers’ City” in Rusafa, and Yarmouk or “Al-Qasim Quarter” located in Karkh [3] (see Figure 2-B).

The layout of residential areas in Zayouna clearly shows the planning principles of Doxiadis, i.e., it contains a central services’ zone that includes schools, Officers’ Club, and other commercial facilities, the surrounding green belt, and gardens in the back of each residential unit (Majeed & Abaas, 2023, p. 203). In Iraq, Doxiadis aimed to solve the housing problem by constructing houses that were suitable



A. Doxiadis Associates plan for Baghdad with parts of master plan already implemented, including Zayouna, marked in red line (DA Monthly Bulletin, n. 9, January 1960). © Constantinos and Emma Doxiadis Foundation. (P. Pyla, 2019, p. 102)

B. Zayouna District (previously Officers Quarter) was already included in Baghdad City Bus Map of 1961. Directorate of Public Transportation, Baghdad, Iraq, 1961 (Gupta, 2021)



C. The map of Zayouna with residential neighborhoods (numbered) (Authors based on Mayorality of Baghdad).

Figure 2. Zayouna District's location in the city of Baghdad.

How decisions are made: Urban and architectural transformations of a modern residential district in Baghdad (1958-2024)

economically, socially, environmentally, and geographically. The government supported these efforts, increasing funds earmarked for housing from 6£ million for the years 1955-1959 to 24£ million for the years 1955-1960 (The Economist, 1958, p. 47). Yet, the Doxiadis Master Plan was never formally approved -- considered incomplete and unrealistic by the authorities -- even though a famous Iraqi architect, Rifat Chadirji, was asked to work with Doxiadis after 1958 to adjust his designs to the needs of Iraqi society (Chadirji, 1991, p. 87). While the contract with the DA ended by 1960, their main principles and planning schemes for housing districts were used as prototypes for many housing projects in Iraq of the time (Pyla, 2008, p. 11).

On the level of single-house design, Zayouna had two types of typical houses that were built by the Ministry of Labor and Housing [4] and distributed to Iraqi army officers in the 1950s and 1960s (see Figure 2-C and Figure 3). These typical houses represent the design style of Doxiadis in regard to spatial organization, building materials, and climatic considerations -- as seen in the Western Baghdad Development (Ahmed, 2008, p. 141). In Zayouna, the typical houses were located in the 714 Neighborhood and two lines of blocks in the 712 Neighborhood. The original dimension of each plot was 18 by 33 meters, with the total plot area of 594 m² (plot size corresponded to land classifications in the Law no.44 of 1935 (Iraqi Laws, 1935)) [5].

The typical houses in Zayouna were implemented by an Iraqi construction company under the supervision of the manager Majid al-Nahr (Alsultany, 2024). The implementation of such a large number of residential units -- managing their construction work, ensuring highest standards and record time -- was a pioneering construction experience for Iraqi engineers and contractors at the time [6]. The acknowledgement of engineer al-Nahr's achievement, and that of his fellow contractors, was voiced in the speech of the Officers' City's opening in July 1960 (Alsultany, 2024).

2.2. The Housing Cooperative Societies and Real Estate Bank

The Housing Cooperative Societies (HCSs) and Real Estate Bank (REB) were important institutions that shaped Zayouna in the 1960s and 1970s. They became the cornerstone of a new Iraqi government housing policy that prioritized distributing land plots and providing state-subsidized construction loans, rather than building complete housing units as had been done in the first phase of Zayouna development. Importantly, the new policy was less costly, which was an important factor for the Iraqi state in light of the housing shortage (Raouf, 1985, pp. 376-377).

The 1958 revolution and its ideological environment supported the cooperative movement, which can be analyzed through the legislation that regulated how lands were distributed

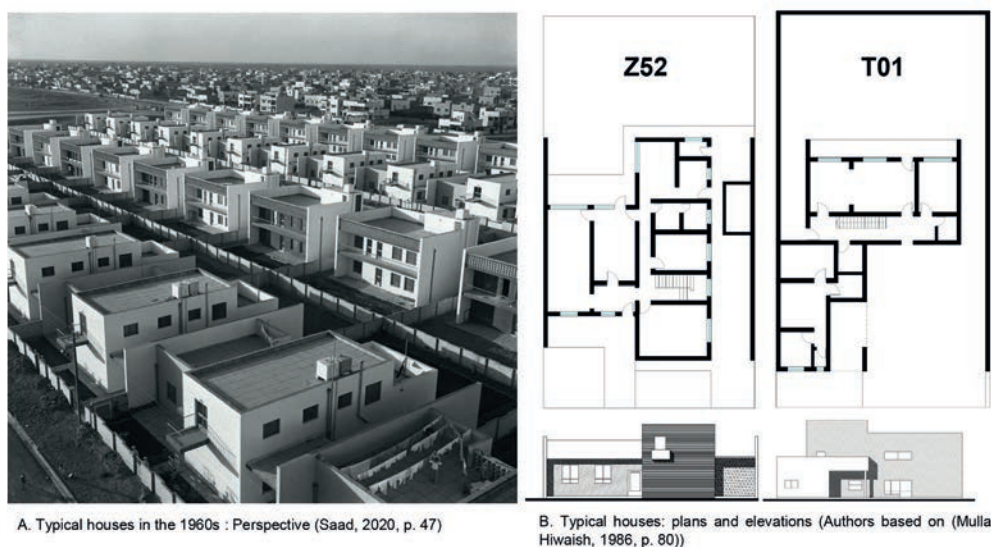


Figure 3. The typical houses T01 and Z52 implemented in Zayouna.

to the people. The Law no.73 of 1959, for example, gave government the right to transform lands from agricultural to residential use in order to divide and distribute the resulting plots among members of the HCSs (Raouf, 1984, pp. 335–337) - as was the case of Zayouna. The HCSs searched for lands available for housing, determined their ownership (private or state-owned) and means of obtaining them. The plots were divided by a team of planners and engineers working for the Mayorality of Baghdad and then distributed to members of the HCS by lottery. A person who acquired a residential plot had to pay the plot's fees and did not have the right to sell it until two years after the house completion (Raouf, 1984, pp. 339–340). The cost of building a house was covered through a loan from the Cooperative Bank and then from the REB after the first was closed in 1970 [7].

After 1963, the private sector had a significant impact on housing, as construction on plots distributed by the HCSs was done by land owners themselves and horizontally, i.e., through a single-family housing type (Mulla Hiwaish, 1988, p. 70). Already by 1970, 40% of the total area of Baghdad was covered with plots distributed by the cooperatives (Raouf, 1984, p. 338). Yet, as pointed out by Raouf, the HCSs and REB did not ensure equal access to housing among different socioeconomic strata of the society as citizens lacking permanent employment could not join cooperative societies to obtain a residential plot or a loan (Raouf, 1984, p. 350).

The idea of officers' housing was started by Haseeb Al-Rubaie, who established the Officers' Cooperative Housing Society in 1953 with the aim to support officers in acquiring their own houses (Al-Rubaie, 2019). According to Law no. 51 of 1970, the Iraqi government decided to give loans for Iraqi officers who received plots from the Officers' HCS. The loans were given by the REB and guaranteed by the HCS to encourage local and foreign companies to contribute in the building process (Iraqi Laws, 1970). In Zayouna of the 1960s and the 1970s, the land surrounding Doxiadis typical housing

-- in neighborhoods 716, 712, and 710 (see Figure 2-C) -- was distributed to officers by the Officers' HCS. Each plot of land was 600 m² (20 by 30 meters) and the houses were built according to their owner's choice, as non-typical designs [8]. The planning of neighborhoods established through the plot distribution by the Officers' HCS (710 and 716) included cul-de-sac and loops, and in that way differed from the grid-shaped streets planned by Doxiadis for neighborhoods 712 and 714 (Theodosis, 2015, pp. 181–182).

From the 1950s until 1979, Baghdad enjoyed the status of "a privileged site of oil-financed modernization," marked by extensive investments in urban development and the housing sector (Walter, 2025, p. 60). The first phase of Zayouna's development, guided by Doxiadis' Master Plan and typical house design, exemplified a strongly top-down approach in which the state acted as the provider not only of the urban layout but also of ready-made housing units. At this stage, residents functioned primarily as recipients of the state-sponsored housing policy, and their influence on development of the district was minimal. The second phase, marked by the distribution of plots through the HCS and the provision of subsidized loans by the REB, brought some changes. Although the overall framework continued to be set by the state, the HCSs mechanism gave more space for bottom-up agency, allowing Zayouna residents to decide regarding the design of their own residential units. Nevertheless, state institutions retained control over key aspects of the urban situation -- most notably the allocation of plots, the enforcement of laws and regulations and the provision of infrastructure -- while residents' agency was largely confined to the design of their houses.

3. Urban and architectural transformations of Zayouna between 1980 and 2003

As argued by Dina Khoury (2013, p. 45), Iraq was effectively at war from 1980 and 2003: the conventional war with Iran (1980–88) was followed by the First Gulf War (1990–1) (Khadduri & Ghareeb, 1997, pp. 169–179), and then

what Joy Gordon (2012) has termed the “invisible war” of harsh economic sanctions (1990-2003). These wars had a profound impact on the Iraqi state and population, including in the field of urban development and housing. The Iran-Iraq War (1980-1988) severely undermined the Iraqi economy and weakened the top-down decision-making in regard to development of residential areas. The first half of the 1980s witnessed implementation of big investment projects in Baghdad, including Haifa Street and Abu Nuwas developments, high-end hotels and a new international airport (Cantacuzino, 1982, pp. 58-59). The second half of the decade, however, brought a significant decrease of oil revenues and the available resources were earmarked for the war effort. By the mid-1980s, all public housing projects were halted [9]. The international sanctions imposed on Iraq between 1990 and 2003 led to further deterioration of the economic situation, sharp inflation in the prices of all goods and services, including housing (Alnasrawi, 2001, pp. 208-215), and impoverishment of large segments of the society (Abdullah, 2012, p. 126).

3.1. Implementation of mid-rise residential complex in Zayouna

In 1965, the Polish firm Miastoprojekt-Kraków signed a contract for the development of a new master and zoning plan for Baghdad (Stanek, 2012, p. 367). The master plan was officially accepted in 1973 and remains in force to this day (henceforth the 1973 Master Plan). Among the major consequences of changing town planning principles from Doxiadis to the 1973 Master Plan -- in Iraq known as Polservice master plan after the Polish foreign trade agency that formally signed the contract with the Iraqi government -- was the proposal for high-rise housing as a solution to the housing problem in Baghdad. It suggested increasing the number of high-rise buildings so as to house some 20% of the city's population (Nooraddin, 2004, pp. 67-68). This recommendation was adopted as government's strategic plan for Baghdad between 1975 and 1979.

The Law no. 911 of 1973 prioritized high-rise housing projects, with 70% of the residential units planned for construction earmarked as residential flats and the ratio of single-family houses reduced to 30% (Mulla Hiwaish, 1986, p. 89). Although a new master plan for Baghdad was commissioned to and nearly completed by the Japanese company JCCF, it was neither legally approved nor implemented due to the 1991 Gulf War (Albadri, 2013, p. 85).

The government's decision to prioritize mid- and high-rise housing projects aimed to address the housing shortage in line with socialist measures for building high-rise industrialized housing systems (Raouf, 1985, p. 378). The governmental studies of the time showed a need for more than 3 million housing units to be constructed between 1981 and 2000. In Zayouna, this policy resulted in the construction of a multi-story residential complex by the General Housing Corporation that began in 1980 (General Housing Corporation, 1982, pp. 2-3). The complex is located in the south-eastern part of Zayouna district, in the 718 Neighborhood (see Figure 2-C) and includes two types of buildings: eighty-six three-story buildings and sixty-seven five-story buildings (see Figure 4). The housing units were distributed to public employees after registration in the General Housing Corporation (Ahmed, 2013, pp. 131-132) and through a lottery [9].

3.2. Transformation of individual houses

During the 1960s and 1970s, most houses in Zayouna preserved their original shape and design. Transformations of individual houses began to appear in the 1980s and due to a number of reasons that affected Baghdad city as a whole: the economic decline due to the Iraq-Iran War, population growth, increased need for housing caused by the freezing of public housing projects, the scarcity of land within the formal boundaries of Baghdad or new regulations regarding the allowed residential plot size. The scarcity of land within the city led the Mayorality of Baghdad to halt the distribution of residential plots

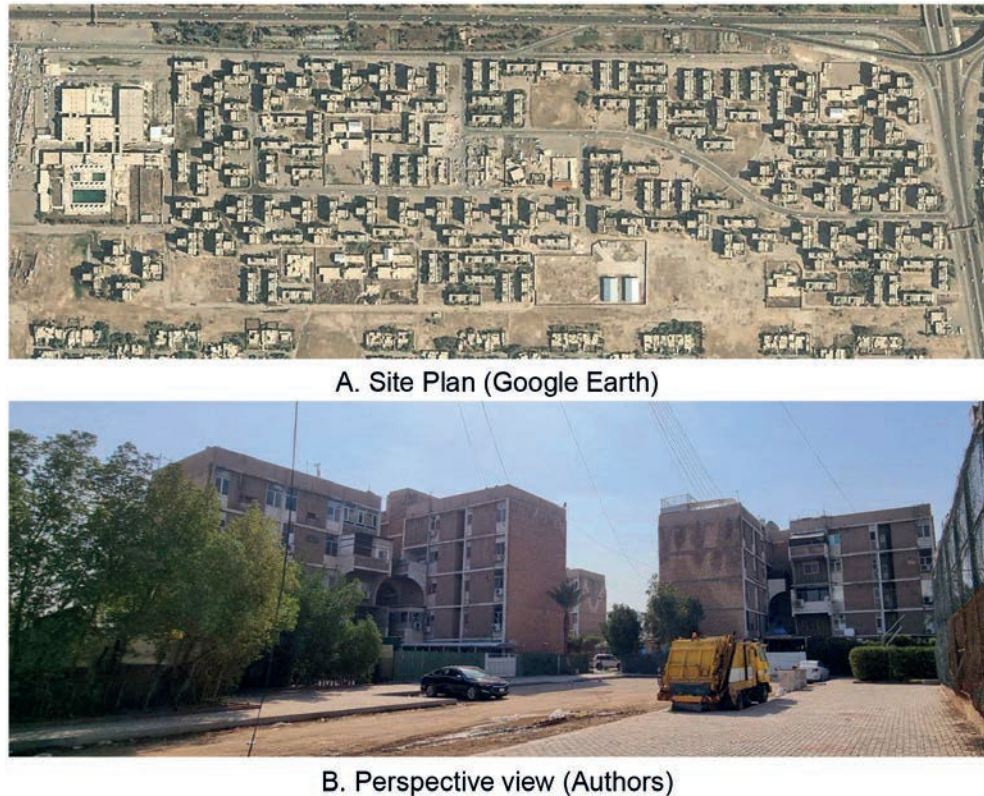


Figure 4. *Mid-rise residential complex of Zayouna.*

inside its administrative boundaries during the 1980s, in line with the 1973 Master Plan [10]. As a result, new plots allocated to officers and martyrs were located outside city limits -- though still within Baghdad Governorate -- but their remote location discouraged Baghdad residents from relocating there [11]. Another factor that led to increase in the residential density of Baghdad in the 1980s was the Law no. 850 of 1979, which allowed the allocation of residential plots of land with a minimum area of 120 m² (Iraqi Laws, 1979). Its negative impact on the city led to a modification by the end of the next decade, when the Law no. 940 of 1987 raised the minimum residential plot area to 200 m² (Iraqi Laws, 1987). These changes in regulations had a significant impact on Zayouna district, where prior to 1979 the minimal residential plot size was 600 m². On the city level, the changes in plot area regulations and in policies of land distribution, combined with the decision not to extend the formal boundaries of Baghdad city, led to gradual residential densification of older districts (such as Zayouna) from the 1980s onwards.

The population growth has also played an important role. In Zayouna, the number of residents increased due to both the growth of local families, whose members generally preferred to settle within the district [12], and immigration from other areas of the city. Until the 1980s, Zayouna was inhabited predominantly by military officers and their families [13], but it later became a popular destination for people from other districts. As argued by experts interviewed, the immigration was driven by different “pull factors” such as the availability of services (e.g., continuous provision of electricity), accessibility and good location within Baghdad, and safety - even during the years of sectarian violence that followed the 2003 invasion [14]. To accommodate expanding families, or gain additional income from rent, in the 1980s the residents of Zayouna began to transform their houses either horizontally -- by adding more spaces to the ground floor -- or vertically by building another floor to create a separate residential unit with an external staircase (see Figure 5).

In the 1990s, the policies and realities of the housing sector reflected the difficult socioeconomic reality of a country under sanctions. Some residential

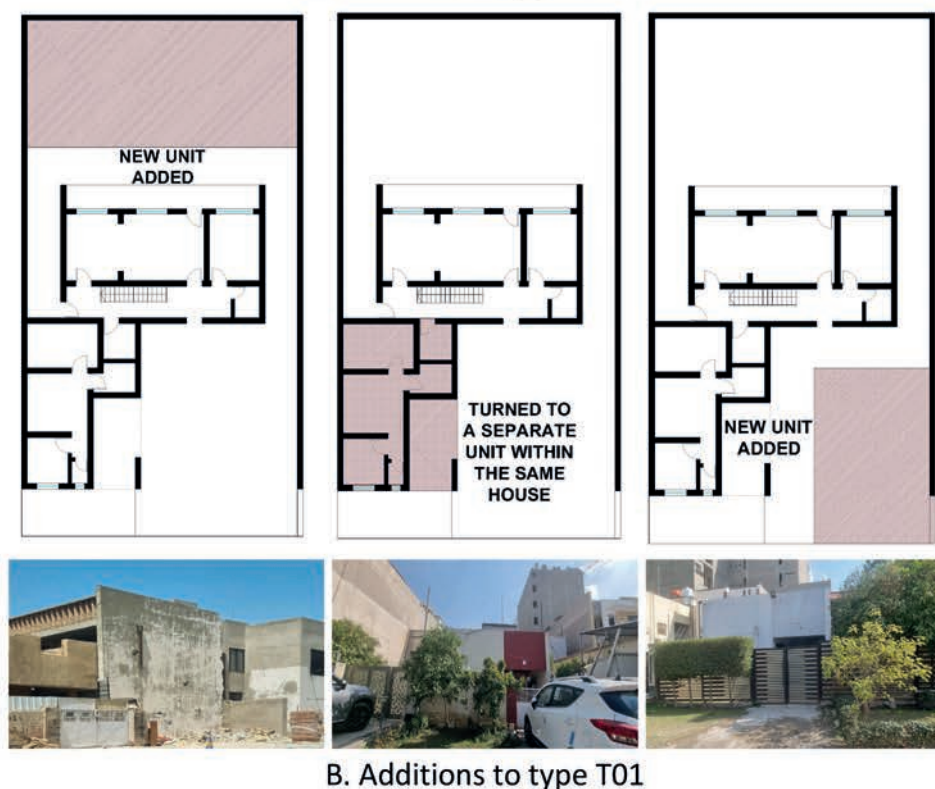
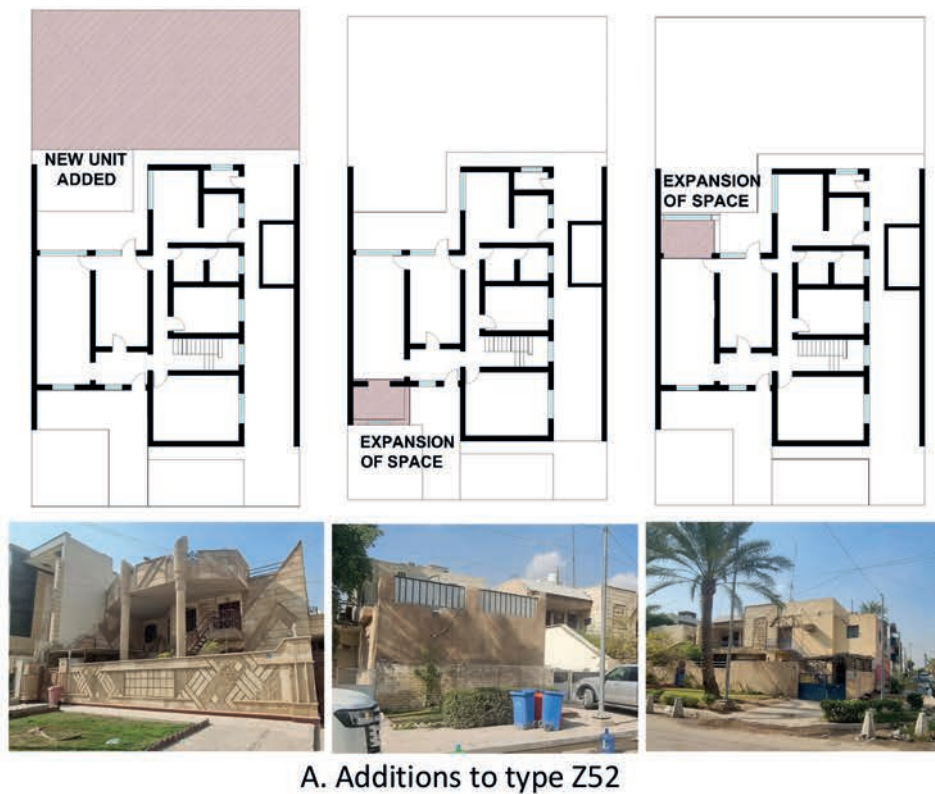


Figure 5. Additions to typical houses, shown in pink. (Authors based on interviews and field observations)

lands were distributed to specific categories of citizens, such as post-graduate degrees holders or military staff, to remedy devaluation of their salaries. This round of distributions was made within the boundaries of Baghdad city

and according to land uses of the 1973 Master Plan. The subsequent round of distributions, carried out between 2000 and 2003, involved the use of agricultural lands and green areas and changing them to residential use – a pattern

that continued after 2003 (Zori, 2008, pp. 46–47). In Zayouna, no land was allocated during these two rounds of distributions and its residents generally preferred to stay near their relatives, either by renting or buying houses in the district, or by adding small houses to the original family house.

The vast state-sponsored construction projects that had been common throughout the 1970s and early 1980s were halted or disappeared altogether in the 1990s (Nooraddin, 2004, p. 78). As a result, residential construction in the 1990s was largely limited to private investments in single-family housing – and even this type declined significantly compared with levels recorded in late 1980s (Wojtaszek et al., 2025, p. 12). This trend reflected the economic conditions of a society in which most citizens were primarily concerned with securing their basic needs under sanctions (Ashour, 2002, p. 93). At the same time, however, the period witnessed emergence of a new social class of merchants and individuals who benefitted from state policies of the 1980s and 1990s [15]. These economic disparities translated into individual house transformations that came down to two types of changes in the facades:

- 1. Subdivision of the original facade to create a smaller residential unit on the same plot for family members or for rent.
- 2. New design features in houses built for newly rich people characterized by lack of attention to human scale, double volume, non-familiar shapes and proportions, and high fences to achieve isolation and luxurious effect (Rzouki & Kubba, 2011, pp. 24–30).

The reality of sanctions meant that all construction projects undertaken in the 1990s had to be carried out by Iraqi professional cadres, using locally available resources and implemented in the most cost-effective manner possible. In that way, the sanctions impacted not only what was built but how. One example was the use of stone sourced from northern Iraq to build facades in the capital, instead of the famous Iraqi brick that became more expensive at the time (Mehdi, 1999, p.

113). Change in material led to change in design, what could be noted through many examples of local architecture in Baghdad. Popular design elements, borrowed from the European classic architecture. In this way, the residential houses imitated the presidential palaces of the time that followed the classical style [16]. This led to the labelling of residential architecture of the 1990s as “façade architecture” (see Figures 6-A and 8-A). Overall, the dominant transformations of individual houses in modern residential districts of Baghdad, such as Zayouna, in the period from 1980 to 2003 came down to the increase of plot coverage and floor area ratio of housing units (due to subdivisions), and transformations in architectural features of the existing and newly built houses (Albadri, 2013, p. 174).

3.3. Transformation of residential streets to commercial use

Al-Rubaie Street, officially registered as “Ammar bin Yaser Street,” is one of the main streets of Zayouna. It lies between two neighborhoods (712 and 714) and connects two major thoroughfares: Palestine Street and Mohammad Al-Qasim Highway. The street has gradually transformed from a residential street of typical houses planned by Doxiadis to a commercial street. First stage of the transformation occurred in the 1980s, when small shops were constructed as part of houses’ facades [17]. In 1985, a survey was conducted by architects and architecture students from the University of Baghdad and University of Technology to measure the attitudes of local residents towards changing the use of the street. The survey found that actually 39% of the residential units were already transformed to commercial use [18]. Following the survey, the Higher Committee of the Master Plan of Baghdad at the Mayorality of Baghdad approved the transformation of Al-Rubaie Street to commercial use around the mid-1980s [19]. However, the change began to be noticeable to residents in the 1990s, after opening of the famous Tadmor pharmacy and the subsequent total transformation of the street’s use [20].

In the 1990s, the Mayoralty of Baghdad developed a procedure that regulated the transformation of residential streets to commercial use and the change in heights of their buildings. These regulations are in place till now and include the following steps:

- 1. A formal request from a group of residents to change the street's use is directed to the local municipality.
- 2. The municipality conducts a questionnaire among residents of the street.
- 3. The request and the results of the conducted questionnaire are presented to a committee at the Mayoralty of Baghdad.
- 4. The committee writes its recommendations to the Higher Committee of the Master Plan of Baghdad to approve or decline the proposed change [21].

In Zayouna, the example of a major street that was transformed through this mechanism is Mousa bin Nossair Street. As discussed above, the sanctions caused a major disruption in economic structure of the Iraqi society, which affected the urban residential landscape of Baghdad. In Zayouna, like in other districts of the capital, the changes included the spread of small shops established within residential plots, adjacent to existing houses. Run by resident families of medium and limited income, the small shops became means to mitigate the effects of financial hardship. In later decades, the spread of small shops contributed to the gradual transformation of many residential streets in Zayouna to commercial use.

In Zayouna, the early 1980s saw a continued dominance of top-down decision-making evident in the state's capacity to mobilize resources for the construction of a multi-family housing complex and to introduce regulations that legalized sub-divisions of the original 600 m² plots, leading to densification of the district. Yet when the state attempted to reverse this decision in 1987, it was unable to enforce it effectively. From the mid-1980s onwards -- and particularly between 1990 and 2003 -- the state grew increasingly weak in its capacity to mobilize resources for the provision of housing solutions and

to enforce existing building regulations through the Mayoralty of Baghdad and the local municipalities [22] (see also Sluglett, 2010, p. 14). In this context, residents undertook bottom-up initiatives to meet their housing needs -- such as by subdividing original family houses or adding small units to them -- and to secure new sources of income under sanctions by opening small shops or renting parts of their homes. The growing influence of residents' agency on architectural and urban transformations of the district was not the result of a state-sanctioned participatory framework, but rather of the state's weakening capacity to provide and regulate. Here, the one exception was the commercial street regulations, which incorporated residents' input into the process. Importantly, however, residents' bottom-up agency did not take the form of community organizing, which remained highly restricted under Iraq's authoritarian regime. Instead, it was exercised through individual actions that brought aggregated results on the district level. While these actions were clearly intentional, aimed at improving the circumstances of individual households, they also -- especially when continued after 2003 -- generated unintended long-term consequences for the urban situation, including the loss of large gardens (Abdullah, 2012, pp. 123–124) or the overburdening of district's infrastructure.

4. Urban and architectural transformations of Zayouna between 2003 and 2024

The war of 2003 (Tripp, 2007, p. 277), and the civil violence of 2006–2009 had a profound impact on Baghdad, triggering migration between city districts and leading to sectarian segregation of residential neighborhoods (Rashid & Alobaydi, 2015, pp. 184–188). Urban infrastructure and public services, already weakened by decades of wars and sanctions, deteriorated further, posing a continuous challenge for city residents (Walter, 2025, p. 187). Law enforcement remained fragile in the post-2003 reality (Sassoon, 2010, pp. 121–122), which in the urban domain resulted in a significant increase in various forms of building violations

(Kadhim & Abbas, 2023). The following section examines the changes that the post-2003 context brought to individual houses and urban situation of Zayouna.

4.1. Transformation of individual houses: sub-divisions, violations and imitations

In regard to architecture and housing of Baghdad, one of the most prominent changes brought by the 2003 invasion was the cancellation of the Law no. 157 of 1994 that limited the right to buy property within Baghdad Governorate to citizens who were registered in the governorate during the 1957 census (Iraqi Laws, 1994). It meant that from 2004 onwards, every Iraqi citizen had the right to own property in Baghdad, which resulted in large-scale immigration to the capital [23]. One of the strategies used by the state to mitigate the resulting housing shortage was to convert areas marked as open spaces in the 1973 Master Plan into residential plots and distribute them to citizens [24]. This was but one step that contributed to the gradual yet continuous depletion of green and open spaces in Baghdad. The demographic growth of Zayouna was due to both the growth of local families and immigration from other areas of the city for security reasons. The increased residential density was not equally distributed within the district - for example, in the 714 Neighborhood the population remained virtually the same between 1997 and 2012 (7,331 vs. 7,586), while in the 712 Neighborhood the number of residents increased by 1,408 over the same period (Abdullah, 2012, p. 121).

Mohamed Salih (2016) identified four main phenomena that shaped residential neighborhoods of the post-2003 Baghdad. First, the division and subdivision of houses and plots that followed two general patterns in the post-2003 Baghdad:

- 1) Division of the original residential unit to smaller units of 50 m² or even less – what resembles the above-mentioned transformations of the 1980s and 1990s;
- 2) Demolition of the original house and building five/six new units on the same plot, as shown in Figure 6.

The latter pattern resulted in the creation of residential houses ranging between 50 and 150 m² and was often implemented by private investors (Mohamed Salih, 2016, pp. 63–64).

Both patterns became widespread after the regime change of 2003 (Motlak & Rzouki, 2013, p. 61) and, as was evident from field observations, Zayouna took a share of these modifications and changes (see Figure 6). According to a survey conducted by the Mayorality of Baghdad in 2023/24, in Al-Ghadeer municipality -- which Zayouna is part of -- 39% of the area was covered by subdivided plots of less than the legal minimum of 200 m² [25].

The second phenomenon has been the rise in building density through increase in the number of floors and shrinking of open and green spaces. In 2004, the Mayorality of Baghdad issued a decision that allowed addition of a third floor to residential buildings (Regulation No.2/4/21721 from 7 Dec 2004). While in the twentieth century Baghdadi skyline was characterized by clear horizontality and homogeneity in residential areas, the change in regulations caused fluctuation in the urban skyline and disharmony between residential houses of different heights (Abdullah, 2012, p. 126). Also, the studies by Abdullah (2012) and Al-Silq & Mohamed Salih (2017) showed a clear increase in the plot coverage within the residential areas after 2003. While before 2003 the residential units were of detached and semi-detached types, they are now entirely of the attached type, which led to the loss of inter-spaces between adjacent residential units. The rise in building density and loss of open areas is clearly visible in Zayouna. In 2014/2015, for example, some of the remaining public green spaces were distributed to martyrs' families by the Officers' HCS as residential plots of about 200 m² each (see Figure 9 on the left: in green are shown open spaces converted to single family houses, in orange are open spaces converted to high-rise complexes).

The third phenomenon regards the violations of building regulations, on both urban and architectural level, which have increased in the post-2003 Baghdad. According to Kawther (2015,



A. Sub-divisions examples (Authors)



B. Part of the 712 Neighborhood

C. Part of the 714 Neighborhood

Figure 6. Sub-divisions of residential units in a single plot. (Authors based on (Abdullah, 2012, p. 138))

p. 72), the first type of violation involves building houses on non-residential land, while the second comes down to building housing units that do not follow building regulations. The most noticeable examples of such violations include the coverage of open spaces within residential plots, building additional spaces in the house garden or parking lot, having more than three-floor-height buildings, dividing a single plot to accommodate twin or triplet identical housing units (Abdullah, 2012, pp. 125-127), ignoring the mandatory front recession distance from the street or building on the sidewalk (Alishaqee & Albazaz, 2019, p. 9). All these types of violations can be found in Zayouna, as shown in Figure 7.

The fourth and final phenomenon is the imitation of whole buildings or respective architectural features from international and local designs. The

phenomenon was started by contractors who worked on the implementation of public projects in the 1980s. As mentioned above, in the 1990s, with the freeze of public investment, these contractors worked for the private residential sector tapping into their earlier professional experiences. The increased role of contractors in the individual house design during the 1990s, at the expense of architects, affected the features of housing units that became more related to the decisions of clients. Ashour (2002) identified two types of imitations that have been used in house design. The first type, mentioned also in the conducted interviews [26], involved the use of massive forms and high fences -- referencing the palatial architecture of the former Iraqi regime -- and the introduction of new functions such as cold and hot kitchen spaces. The second type, regarded the



A. Having more than three-floor-height buildings in one residential plot



B. Covering open spaces and ignoring recession distance

Figure 7. Examples of building regulations' violations in Zayouna. (Authors)

imitation of traditional features, such as “shanasheel” or projecting oriel windows, with the use of new building materials such as glass and steel (Ashour, 2002, p. 97). While the phenomenon of imitation started in the 1990s, it gained momentum after 2003 and the Internet became an important factor facilitating the process (Nooraddin, 2004, p. 78). In the literature, the phenomenon is also referred to as “image culture,” where the decision-making is based on an image of the design that the client presents to the architect and asks for its implementation (Mohamed Salih, 2019, p. 159). The imitation phenomenon affected house design in Zayouna, as shown in Figure 8.

4.2. Transformations of the urban situation: height restrictions and investment projects

Other than house transformations described above, in the post-2003 Zayouna it was the changes in height restrictions and implementation of investment projects that had the main impact on the urban situation of the district. In terms of the former, already in 2009 there were no typical houses left on Al-Rubaie Street, which was now flanked with buildings ranging from three to seven stories – although height restrictions at the time allowed for three to four floors in the case of commercial streets [27]. In 2015, the Mayorality of Baghdad approved new regulations that tied height restrictions to the ratio of building height to street width. In line with the regulations, it was now allowed to build seven-story structures at Al-Rubaie Street, with the condition of establishing a helicopter landing on top of each building [28]. This led to converting the whole street to commercial use, with tall buildings on both sides (see Figure 9). In 2024, the number of shops on the street reached 923 [29] and it became famous for electronic commerce, internet and communications centers. Among the street landmarks are Al-Rubaie Mosque, Officers’ HCS and several modern commercial malls such as Al-Ameer Mall, Al-Jawhara Mall, and Piano Mall (Al-Rufeye, 2022, p. 133). Currently, more streets in Zayouna are being transformed for commercial use,

especially on the borders of respective neighborhoods. The process of their transformation follows the procedure described above [30].

It is not only residential streets that have been converted to commercial use – green and public spaces of Zayouna have also been affected. One prominent case is the “Al-Firdous Park,” located in the 708 Neighborhood on the so-called “highway prohibited lands,” adjacent to the Mohammad Al-Qasim Highway, and designated as a public park in the 1973 Master Plan. Nonetheless, it was changed to commercial use under the Investment Law no. 13 of 2006 and its later modifications (Iraqi Laws, 2006; Iraqi Laws, 2010; Iraqi Laws, 2015) and given for building commercial malls (Najah et al., 2023, p. 558). It led to overcrowding and put considerable pressure on the local infrastructure (see Figure 9). Ultimately, construction of two malls in this area became a turning point that led to the transformation of adjacent residential streets into commercial use [31].

Other examples of changing land use for investment can be found, according to the field observations, in neighborhoods 710, 712, 714 and 716, where some houses are being demolished and changed to private schools. These transformations are considered illegal because the area of 600 m² is insufficient for a school building. At the same time, other public open spaces are being taken for investment to build high-rise residential complexes. This includes the “Al-Thulatha’a Market,” a public market in the 718 Neighborhood, which was demolished in 2022 and is being replaced with a high-rise residential complex of more than ten floors. According to the experts interviewed, these changes in land use occur because the lands are owned by different ministries, such as the Ministry of Trade in the case of Al-Thulatha’a Market or the Ministry of Finance in the case of open public spaces. It means that these changes are out of control of the Mayorality of Baghdad [32]. Importantly, the phenomenon of building high-rise residential complexes by private investors or through public-private partnerships is not specific to Baghdad and, in fact, started in other governorates before it reached the capital (Yass, 2014).



Figure 8. Examples of imitation in house design in Zayouna. (Authors)

Of the three periods analyzed (see Figure 10), residents' agency had its most significant and visible impact on the architecture and urban situation of Zayouna in the post-2003 era. Confronted with the shortcomings of the state and the reality of weak law enforcement, residents took it upon themselves to secure their housing and financial needs -- while private investors pursued their own agendas -- often with little or no regard to the existing laws and regulations. Although origins of these practices can be traced back to the 1990s, unregulated construction

gained full momentum in the post-2003 Zayouna, mirroring developments across Baghdad as a whole. The new state policies and laws that directly affected the district were largely deregulatory in character -- from revised height restrictions and investment laws to changes in land use -- and appeared to be reactive to bottom-up pressures rather than a result of top-down vision. In Giddens' terms, the Iraqi state lost much of its allocative and authoritative resources in the aftermath of the 2003 invasion. Although laws and regulations formally remained in place, they were no longer reproduced in action by actors on the ground, who began to "do something differently" in order to meet their needs.

5. Conclusions

It could be concluded that it is possible to capture how the forms of interaction between structure and agency evolved through Zayouna district's urban and architectural transformations across the three periods under study.

In this context, the theory's analytical strength lies in its focus on action, which, when applied to urban change, highlights certain transformations of the urban environment. The focus on top-down decision-making risks overemphasizing the role of the state in shaping the built environment. On the other hand, there could be forms of urban agency that are neither mediated through formal participatory frameworks nor collective organizing, but instead emerge from bottom-up initiatives aimed at improving the circumstances of individual actors. By accounting for both the intended and unintended consequences produced by the urban agency, it allows changes on the ground to be analyzed from the perspectives of different agents and across multiple timeframes (e.g., short- or long-term).

The case of Zayouna is an example of a broader process of the gradual weakening of the capacity to mobilize resources in the fields of housing and urban development, whether through the provision of housing solutions or the enforcement of policies and regulations. Although the state continued to introduce new laws and regulations

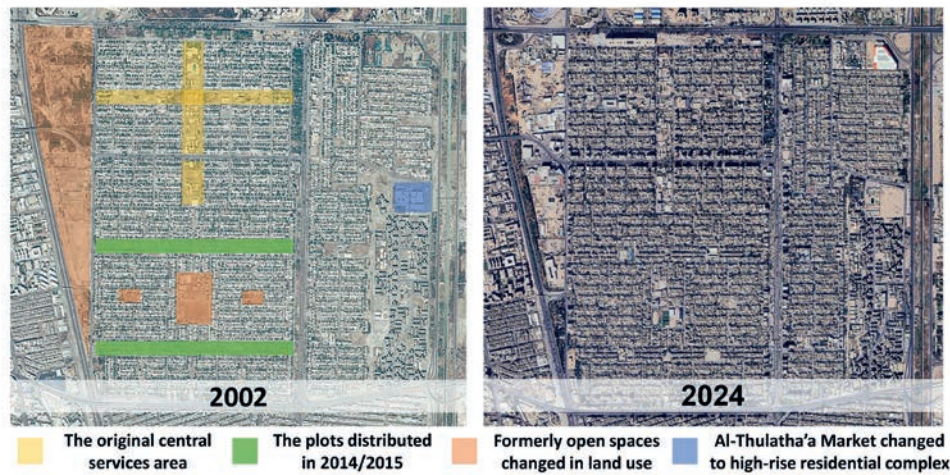


Figure 9. The changes of land use in Zayouna after 2003. [29]

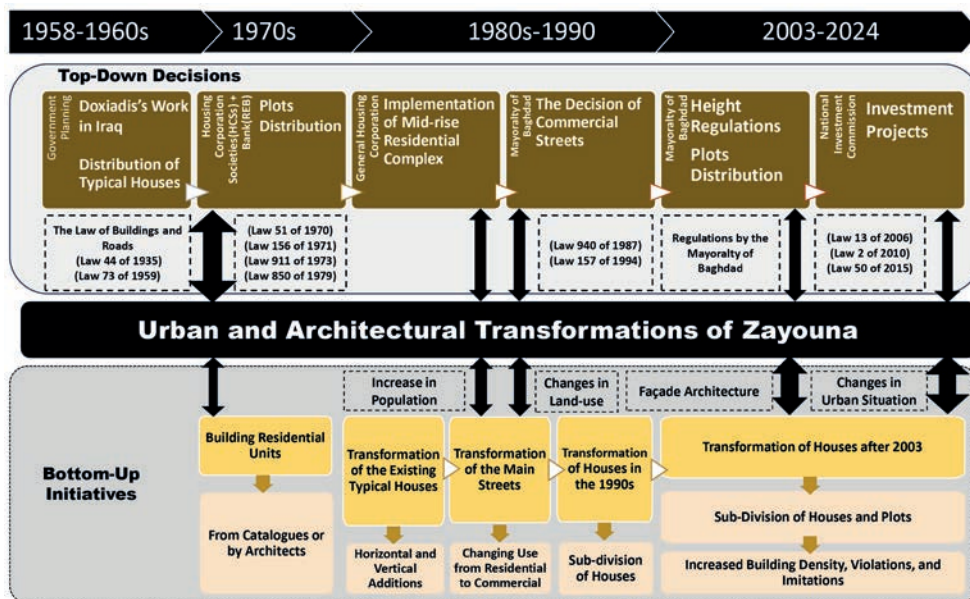


Figure 10. Top-down and bottom-up decisions that shaped Zayouna. (Authors)

affecting the district after the 2003 regime change, these measures were largely deregulatory and reactionary in character and, in this sense, did not resemble the top-down decision-making of the first period (1958-1979), which aimed to provide vision, guidance and control. The analysis shows that, over time, quiet encroachment became the dominant mode of urban agency shaping the district's urban and architectural transformations. The unintended consequences of these bottom-up actions became evident in the long run, including overcrowding, the overburdening of infrastructure and the loss of green and open spaces. While an effective strategy for individual actors to secure housing and financial needs, the quiet encroachment mode of urban agency did not generate collective vi-

sions or solutions for Zayouna's urban situation among its residents, nor did it promote an understanding of the district's urban space as a public good.

Endnotes

[1] The Mayorality of Baghdad was called the capital's municipality "Amanat Al-Asima (AAA)" till 1987.

[2] Expert interview 01, Baghdad, 21/1/2024; Expert interview 05, Baghdad, 29/2/2024; Expert interview 08, Baghdad, 5/3/2024; Expert interview 11, Baghdad, 9/6/2024. All interviews were fully anonymized and in endnotes they are identified by interview number, location and date.

[3] Expert interview 10, Baghdad, 25/4/2024.

[4] The name of the Ministry was

changed to “Housing and Construction” in the 1890s, and “Construction, Housing, Municipalities and Public Works” after 2003.

[5] Expert interview 01, Baghdad, 21/1/2024.

[6] According to the expert interview 08 (Baghdad, 5/3/2024), it was the first attempt to use standardization in construction of low-cost houses in Baghdad and the construction standards were as follows: 36-centimeters-wide walls, white facades, satin flooring (tiles with dimensions of 25 * 25 cm), mixed ribbed concrete roofing, ceramic tiles in the bathrooms to a height of one meter and in the kitchen only behind the sink.

[7] The value of the loan was 3,000 dinars, disbursed in three parts, and was to be repaid over 25 years in case of fixed-paid employees (Raouf, 1984, p. 347; Expert interview 05, Baghdad, 29/2/2024).

[8] Expert interview 03, Baghdad, 25/1/2024; Expert interview 04, Baghdad, 29/2/2024; Expert interview 05, Baghdad, 29/2/2024; Expert interview 06, Baghdad, 2/3/2024; Expert interview 08, Baghdad, 5/3/2024; Expert interview 09, Baghdad, 11/3/2024.

[9] Expert interview 01, Baghdad, 21/1/2024.

[10] Expert interview 03, Baghdad, 25/1/2024.

[11] Expert interview 12, Baghdad, 9/6/2024.

[12] Expert interview 05, Baghdad, 29/2/2024; Expert interview 12, Baghdad, 9/6/2024.

[13] Expert interview 08, Baghdad, 5/3/2024.

[14] Expert interview 01, Baghdad, 21/1/2024; Expert interview 06, Baghdad, 2/3/2024; Expert interview 10, Baghdad, 25/4/2024; Expert interview 11, Baghdad, 2/5/2024; Expert interview 12, Baghdad, 9/6/2024.

[15] Expert interview 07, online meeting, 4/3/2024.

[16] Expert interview 11, Baghdad, 02/05/2024.

[17] Expert interview 05, Baghdad, 29/2/2024; Expert interview 08, Baghdad, 5/3/2024.

[18] Unpublished Report, Mayorality of Baghdad, “Planning and design standards and regulations for some

mixed-use streets in Baghdad,” Baghdad, 1985.

[19] Expert interview 01, Baghdad, 21/1/2024; Expert interview 02, Baghdad, 23/1/2024.

[20] Expert interview 12, Baghdad, 9/6/2024.

[21] Expert interview 14, Baghdad, 5/11/2024.

[22] Expert interview 03, Baghdad, 25/1/2024; Expert interview 06, Baghdad, 2/3/2024.

[23] Expert interview 15, Baghdad, 5/11/2024.

[24] Expert interview 12, Baghdad, 9/6/2024; Expert interview 15, Baghdad, 5/11/2024.

[25] Expert interview 13, Baghdad, 5/11/2024.

[26] Expert interview 10, Baghdad, 25/04/2024; Expert interview 11, Baghdad, 02/05/2024.

[27] Mayorality of Baghdad, Regulation No. 14783, 5th July 2005.

[28] Mayorality of Baghdad, Regulation No. 2392, 4th March 2015.

[29] Expert interview 16, Baghdad, 3/12/2024.

[30] Expert interview 15, Baghdad, 5/11/2024.

[31] Expert interview 09, Baghdad, 11/3/2024; Expert interview 11, Baghdad, 2/5/2024; Expert interview 12, Baghdad, 9/6/2024.

[32] Expert interview 16, Baghdad, 3/12/2024.

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Playing children: Documenting autonomy-supportive space using an architectural-psychological method

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Abstract

Preschool children display their newly acquired autonomy during playtime by initiating creative play free from parental control. The development of autonomy requires encouraging environments physically as well as socially. However, how physical properties of play spaces affect children's autonomy is not well documented, partly because of the methodological difficulties involved in such fieldwork. Certain spaces may encourage or discourage autonomous behavior in children. The purpose of the study is to investigate how space can support children's autonomy during play using architectural visualization methods along with theory from the field of psychology. It focuses on the interaction between children, parents, and space and takes play as a medium of investigation through a series of workshops with children aged 3-6 years and their parents took place in the period of two months. Maps of play areas were created using architectural visual documentation techniques while children's play activities were analyzed with a pre-determined coding system. The observation of play activities suggested that children's concentration while playing is an important indicator of autonomy. It demonstrated that spatial arrangements define the distance between children and their parents, which in turn influences the children's concentration that is required for their autonomous play. Combining knowledge and techniques from the fields of psychology and architecture, the study documented how the space supports children's autonomy rather indirectly via its effect on parental proximity, while outdoor spaces with their rich environment instigate such autonomous behavior.

Keywords

Autonomy, Children, Play, Space.

1. Introduction

Child development does not occur independently from the child's physical environment. The space where children live and play is not a mere backdrop of their development, but a vital facilitator of their early development. As an example, depth perception in infants is known to develop as they learn to crawl and explore space (Gibson & Walk, 1960). Likewise, children acquire a sense of autonomy through their experience of independent exploration of their environment (Bowlby, 1988). They strike a balance between taking risks and feeling secure under the supervision of parents (Erikson, 1963). In preschool years, children's mastery of autonomy and initiative becomes increasingly visible during play, as an essential component of their learning and development (e.g., Piaget, 1954; Vygotsky, 1978). Play is a stage in which children can fully realize themselves and express their true selves (Agamben, 1993). Children's play can occur spontaneously anytime and anywhere, beyond the assigned spaces such as playgrounds. Even intervals between basic activities such as sleeping, toileting, and eating can be used as moments of play as long as the child intends to do so. While playtime supervision is essential for toddlers and preschool children, the physical conditions of play spaces influence the nature of this supervision. The more spatially distant the parents are, the fewer children depend on parental approval, and thus, they will be better able to concentrate on play. However, the way space serves as a context for play is not only limited to this and warrants further examination.

This paper dwells on the relationship between the spatial settings and children's autonomy. Autonomy, in this paper, is defined as the agency and volition displayed by children during play. Autonomous play is free play initiated by a child without the intervention of others. Children's autonomy in play is defined as play that is independent of external control, in which they can concentrate, create, have a physically comfortable body language, express their ideas freely, and most importantly, enjoy themselves and disconnect

from what is going on outside. Autonomy presents itself through behaviors that indicate an ease with which children express their ideas, their level of creative engagement, and their ability to independently concentrate on and sustain play. In this research, these indicators were planned in a structured observational framework that included a comparative scoring system to analyze changes in autonomy in different spatial conditions. The aim was to gain a deeper understanding of the nature of interaction between children, parents, and the space in which children play, and discuss how space can support the development of autonomy in children.

Given the interdisciplinary nature of the research topic, the paper draws on theories and research from developmental, educational, and environmental psychology, in addition to architecture. However, even though psychology literature suggests that characteristics of the physical environment affect children's behavior, including in play, only a small number of studies illustrate how (e.g., Abbas et al., 2012; Berg & Medrich, 1980; Woolley & Lowe, 2013). Some of these studies were conducted in artificial laboratory environments and focused on the effect of a small number of environmental stimuli (e.g., Pellegrini & Perlmutter, 1989). On the other hand, field research that documents the physical properties of space where children's play occurs naturally is limited, arguably due to a lack of access to techniques of surveying, mapping, or documenting the physical space. The present research can be seen as a product of collaboration between architecture and psychology to tackle the problem stated above. To demonstrate the way in which play spaces can foster autonomous behaviors in children, in other words, to assess autonomy and its spatiality, the author has conducted several workshops in which children's interactions with the spatial environment were observed systematically. In this research, both indoor and outdoor play activities were studied. Along with the use of geographical/architectural tools of mapping and drawing to document the features of play spaces precisely, psychology literature (e.g., Erikson, 1963; Fromberg & Ber-

gen, 2006; Smilansky, 1968) contributed to the planning of play activities and play settings, their documentation, data collection, and their interpretation.

2. Children, play, and autonomy

According to the literature on child development, the acquisition of autonomy is an important milestone. Erikson's (1963) theory of psychosocial development describes early childhood as marked by the "autonomy versus doubt and shame" conflict, in which autonomy is defined as learning to be independent (e.g., using a toilet by themselves, choosing their own clothes) and achieving a sense of self-efficacy as opposed to self-doubt. Only after mastering this rudimentary autonomy can the children move on to the subsequent preschool stage (3-6 years), where they learn to exercise initiative. At this stage, exploration and play are their important activities. Children of this age group display their newly acquired sense of agency in their play activities, through independent excursions and free play, without the control of parents. Their activities are supported by safe spaces and play environments that foster a sense of personal control (Côté-Lecaldare et al., 2016; Edwards, 2002; Erikson, 1963). Montessori (1964) emphasized the importance of autonomy in children, whose main area of expression is play. She recognized the connection between children's environment and the development of psychological autonomy. To advocate autonomy in children, the Montessori classroom environment typically offers choices to children (Lillard, 2005), thus encouraging them to make their own decisions and have control over the environment. According to this view, improvisational play settings allow children to display more autonomous behavior in comparison to structured settings. The spatial qualities of the play setting also contribute to the encouragement of such behavior. For instance, a study of inner-city children found that they engaged significantly more in creative and complex play in green outdoor spaces than they did in relatively barren spaces (Faber Taylor et

al., 1998). Natural outdoor spaces offer more opportunities for unstructured and creative play. Play is important for supporting physical, emotional, and social development (Avcı Karaduman & Bozkurt, 2025).

Self-Determination Theory (Ryan & Deci, 2017) recognizes autonomy as one of the three basic psychological needs of humans, together with competence and relatedness. Kagitcibasi (2005) defines autonomy as a matter of agency and volition. An autonomous person can willingly initiate and direct their own actions without being controlled by external forces. Although the degree of autonomy is commonly measured on the dependent-independent dimension, autonomy does not necessarily mean separation from parents. Children can learn to be their own agents while at the same time maintaining close relationships with their parents (Kagitcibasi, 2005, 2017). The development of autonomy depends on the person's social environment. For instance, children's autonomy can be encouraged by parents and teachers who support independent decision-making and free exploration during play (Lapsley & Stey, 2010; Mani et al., 2012; Satani, 2021). Fromberg and Bergen (2006) point out changing trends in children's play, which is nowadays oriented towards digital and electronic play, organized sports and activities, creative and imaginative play, virtual and online play, and educational play, rather than traditional and outdoor play. One of the reasons for the changing trend is the increasing concerns about the safety and protective attitude of parents. Aman (2023) suggests that playground surfaces should be viewed not only as a safety requirement but also as an active design element. According to Hillman et al. (1990), the balance between the protective attitude of parents towards children and children's risk-taking is important for the acquisition of independent mobility. Permitting children to do some activities on their own and letting them take risks can also elevate their self-esteem (Hillman et al., 1990). Parental attitudes and behaviors—ranging from giving children complete freedom to restricting independent mobility out of safety concerns—inev-

itably affect children's behavior (Douceff, 2021). For example, observation of Hart (1979) suggests that if adults let children play freely, they would use the entire space. Thus, the development of autonomy seems to be a product of the interaction and negotiation between the child and their parents. Therefore, when observing children's activities during play, parents should also be treated as participants.

3. Examining the gap: The dynamics of play, autonomy, and space

While existing research in architecture and related disciplines has examined the relationship between children and space, they do not address autonomy in children. Research in environmental psychology and related architectural studies has emphasized the importance of spatial issues by fostering thoughts on ecological approaches to visual perception (Heft, 1989), but architectural studies often focus more on broader child-environment interactions without explicitly framing autonomy as a central concept (Kytä, 2004; Woolley, 2008). Some of the relevant literature has focused on participatory architecture, i.e., architecture in which children are involved in the design. While such studies (e.g., Arın Ensarioğlu & Özsoy, 2021; Ataol et al., 2020; Burke, 2005) tend to emphasize participatory approaches to understanding children's spatial experiences, they fail to systematically analyze how specific spatial conditions facilitate or inhibit autonomy. Given that autonomy is a fundamental component of children's activity, creativity, and socio-cognitive development (Deci & Ryan, 2000), more architectural research is needed to examine how spatial configurations and environmental affordances constrain or enhance, or at least influence, autonomy in play. This study aims to bridge this gap by integrating architectural analysis with theories of autonomy through interdisciplinary approaches, thereby contributing to a more comprehensive understanding of how space shapes children's experiences of independent play through case-based research.

4. Observing children's play

4.1. Research design

The research was based on field observation of children's autonomous behaviors during play. The researcher observed naturally occurring play behaviors of children in workshop settings and analyzed their patterns. Naturalistic field observation, as opposed to laboratory-based observation, has been a preferred methodological choice in the study of child development (Bronfenbrenner, 1977). Naturalistic observational methods have been widely and successfully used in the studies of children (e.g., Tan, 2019), especially in research on play and spatial experiences (Clark, 2005). Since behaviors observed in a controlled laboratory setting may not reflect real child-environment relationships (Bronfenbrenner, 1977), the choice of field research was crucial for the present study. This method also allowed the researcher to directly observe the influence of various spatial conditions on children's behaviors. Children, especially under 8 years old, tend to express themselves nonverbally, typically through activities such as making a map or building a miniature world with natural materials, more than using words (Hart, 1997). Children's perception of the world develops through direct interactions with the physical as well as social environment (Mitchell, 1991). Children flip the power balance between themselves and the environment by expressing their agency in play through the creation of a world fully controlled by them, thus transforming themselves from the *powerless* to the *powerful* (Percy-Smith et al., 2023). As Lester and Russell (2008) point out, the observation and evaluation of the play-space relationship need to be conducted by taking into consideration the dynamics between the parents' control directions and the children's actual behavioral tendencies. The method of field observation was an appropriate choice for capturing naturally occurring play patterns of children under specific spatial conditions (e.g. distance from

parents) and their connection to the emergence of autonomous behavior. For the reasons listed above, field observation research was designed to explore the dynamic relationship between children's play, space, and autonomy.

The field observation of children's play was conducted in the context of play workshops described in detail below. The researcher (the first author) facilitated these workshops while at the same time doing the observation, thus making her a participant observer. The types of play children display in the spaces, as well as the spatial properties of different settings, were carefully documented and qualitatively analyzed by the researcher using both architectural and psychological tactics.

4.2. Play workshops

Data collection was planned for the period of two months. The researcher organized as many workshops as possible within this limited period to enable repeated and comparable observations of play behaviors across different spatial conditions and activity types. As a result, 17 workshops were completed. The advantages of conducting multiple workshops were being able to include locations with rich contextual diversity and potential for children to explore a variety of materials available there. Meanwhile, also existed are the challenges of studying the environment-behavior interactions with children in the field. As with all field studies, limited controllability of confounding variables added to the challenge. As Berk (2013) suggests, activities had to be organized according to the attention span of young children. So, the workshops typically lasted up to one hour considering the concentration capacity of children. As Table 1 shows, there were six types of workshops (T1-T6), whose detailed descriptions can be found in Table 2. The content of workshops varied in terms of their activity types (see Section 4.5). Each type of workshop was intentionally held in more than one location. The spatial characteristics of these locations were coded using six space-

type categories (see Section 4.4). The combinations of different activities and locations allowed for variations in the workshops.

The researcher (the first author) was responsible for the entire planning and setup of the workshops, which were held through consecutive weekends over a period of two months. Figure 1 presents the snapshots of 17 workshops as a collage, labeled with the workshop number.

4.3. Participants

The participants were children aged between 3 and 6 and their accompanying parents. Although gender was not a criterion for participation, all accompanying parents in the study were mothers. Developmental stage theories (Erikson, 1963; Vygotsky, 1978) helped determine the target age group. Ages 3 to 6 belong to a sensitive period in which, even though many capacities of children are not fully consolidated in terms of autonomy, they can be developed in a balanced manner by social interaction and guidance (Vygotsky, 1978). Children of this age group were expected to best display autonomy development during play, since they had already acquired basic physical autonomy (e.g., independent mobility) and were in the stage of learning to exercise initiative (Erikson, 1963).

The child-parent pairs were recruited through the researcher's social networks and connections using a purposive sampling strategy. Parents of 3 to 6-year-old children were targeted and invited to play workshops. Invitations were also shared via social media. Before the workshops, voluntary participants were presented with an informed consent form explaining the purpose of the research, the workshop procedure, the privacy protection of children, the confidentiality of the information gathered, and the use of the data for scientific research only. Those who agreed to let their child participate signed the consent form. Even though parents did not have a participatory role in the workshops, they brought their children and waited for them. Their presence was a crucial part of the study.

Table 1. Summary of workshops.

Workshops				Participants		Observed Play Criteria & Scores (1-7)							
No.	Type-Title	Space Type * ₁	Activity Type * ₂	Number of Children	Age Range	Parental distance	Concentration	Creativity	Independent Decision	Voicing	Joy	Free movement	
1	T1. Design your own garden	S1	A3+A4	10	3-6	1	3	3	2	2	3	1	
2	T1. Design your own garden	S3	A3+A4	3	4-6	5	5	5	6	6	5	5	
3	T2. Dinosaur garden	S2	A3+A4	4	4-6	2	4	3	3	3	4	2	
4	T2. Dinosaur garden	S3	A3+A4	4	3-5	5	7	7	6	6	7	5	
5	T3. The Stone Age	S3	A3+A4	2	4-5	5	6	7	5	5	6	5	
6	T2. Dinosaur garden	S2	A3+A4	4	4-5	2	3	3	3	3	3	2	
7	T4. Toys from recycled materials	S3	A3+A4	20	3-6	5	6	6	7	7	6	5	
		S4	A3+A4			7	7	7	7	7	7	7	
		S5	A3+A4			5	6	6	7	7	6	6	
		S6	A3+A4			5	6	6	7	7	6	6	
8	T3. The Stone Age	S3	A3+A4	3	4-5	5	6	7	7	7	6	5	
9	T5. Nature explorers	S4	A3+A4	4	3-5	7	7	7	7	7	7	7	
		S5	A3+A4			5	5	6	7	7	5	6	
		S6	A3+A4			5	6	6	6	7	5	6	
10	T5. Nature explorers	S4	A3+A4	3	4-5	7	7	7	7	7	7	7	
		S5	A3+A4			5	6	6	7	7	5	6	
		S6	A3+A4			5	6	6	7	7	6	6	
11	T6. Little architects	S2	A1+A2+A4	2	4-5	2	4	4	2	2	3	2	
12	T6. Little architects	S2	A1+A2+A4	2	4-5	2	3	3	2	1	3	2	
13	T6. Little architects	S2	A1+A2+A4	2	4-5	2	3	3	2	2	3	2	
14	T6. Little architects	S2	A1+A2+A4	2	4-5	2	4	4	4	5	5	2	
15	T6. Little architects	S6	A1+A4	3	4-5	5	6	6	7	7	5	6	
16	T1. Design your own garden	S3	A3+A4	6	4-6	5	6	7	7	7	6	5	
17	T1. Design your own garden	S3	A3+A4	5	4-6	5	6	6	6	6	6	5	

*₁ Space Type: S1. Indoor, Café; S2. Indoor, House; S3. Outdoor, Linear seating; S4. Outdoor, Cluster seating; S5. Outdoor, Group seating; S6. Outdoor, Random seating

*₂ Activity Type: A1. Constructive ; A2. Play with Rules; A3. Physical; A4. Creative Play

The number of children who participated in each workshop varied (See Table 1). The same child could participate in more than one workshop. The total number of children who participated across the 17 workshops was 24 (13 males, 11 females). The mean age was 4.9 years. On average, the children participated in 3.3 workshops each. However, two children participated in all 17 workshops. All the mothers were university graduates, seven of whom had a master's degree. Although no direct effect of parental education levels on children's play could be measured at this stage, it is important to include this information as it may be necessary for future studies, especially when examining different cultural contexts or educational backgrounds of participants.

4.4. Spatial characteristics of the workshop sites

The workshop sites took place in the Kozyatağı district of Istanbul, in outdoor and indoor spaces such as Kozyatağı Garden (a private cafe with a garden) and a house. The workshop sessions alternated between indoor spaces and outdoor locations. These outdoor locations were chosen for security reasons. The workshops in the Kozyatağı Garden took place in an unstructured space of a large, enclosed private garden, protected from traffic by a fence but allowing children to move freely. Out of 17 workshops, 10 were held outdoors with various seating arrangements for different activities. The seating arrangements were observed to examine the children's autonomous behaviors and

Table 2. Workshop types.

Type	Title	Description
T1	Design your own garden	Children were given a container, soil, gravel, leaves, pine cones, and a few succulent plants, which are very easy to handle. Then, they designed their own little gardens as they wished. At the end of the workshop, they took their creations home and continued to water them once a week.
T2	Dinosaur garden	After learning fun facts about the dinosaur era, children hatched dinosaurs from egg-shaped ice using a small hammer or other methods. They then created miniature dinosaur habitats by planting plants in wooden containers while having a sensory experience with soil, water, and ice. They could also collect materials from nature whenever they wanted.
T3	The stone age	Children decorated balloons that serve as molds for cave structures. They covered them with craft paper and natural materials and then popped the balloons, leaving hardened cave structures. Placed in an earthenware container filled with sand and plants, these caves created personalized prehistoric environments. In doing so, they could express their creativity in any way they wanted with materials from nature. Children kept the caves they created.
T4	Toys from recycled materials	Children are encouraged to design their own toys using reused materials such as cardboard rolls and plastic bottles. They also collect natural elements to incorporate into their designs. By having hands-on interactions with recyclable and organic materials, they were encouraged to be creative and sustainable. With these materials, for example, they made tiny puppets to talk and interact with each other.
T5	Nature explorers	Children used magnifying glasses to explore nature while playing with recycled materials. They freely examined the nature of the moment. They also interacted with the natural environment by playing with water, soil, mud, branches, etc. Since this workshop took place in a large open wooded area surrounded by fences, it encouraged improvisational activities led by children's initiative.
T6	Little architects	Children explored historical architecture hands-on by recreating buildings from different eras, such as the houses of Çatalhöyük, Ancient Egypt, Rome, Greece, or the Middle Ages. First, they were introduced to these historical periods with a short, age-appropriate, simplified narrative. They then created their own tiny historical sites. Using a variety of materials. They gained insights into the architectural styles and construction techniques of these civilizations. At the end of the workshop, they kept their creations.

spatial interactions during play. Four different spatial configurations were experimented with: 1) Linear, in which wooden seating groups were arranged in straight alignment to encourage structured participation; 2) Group, in which seating groups were positioned in smaller clusters to facilitate face-to-face interaction and collaborative activities; 3) Clusters, in which seating areas were distributed around a central free natural space to encourage movement between spaces and various levels of participation; and 4) Random, in which benches were placed in an irregular arrangement to allow for spontaneous and flexible use of the space. These seating arrangements, differentiated according to the various workshops, were systematically documented and observed to understand how spatial organization affects children's autonomy, concentration, and self-expression

during play. By deliberately creating variations of seating arrangements, other than macro scaled spatial differences, how those micro spatial configurations influenced children were also observed.

Spatial characteristics of the sites were documented using a coding system developed by the author, which combines several criteria, e.g., indoor-outdoor, familiar-unfamiliar, private-public, structured-unstructured, natural-artificial, as well as seating arrangements. The workshop sites were sorted into six space types: S1) Indoor-café (i.e., structured, unfamiliar, urban public), S2) Indoor-house (structured, familiar, private residential), S3) Outdoor-linear (i.e., natural, linear seating), S4) Outdoor-cluster (i.e., natural, clustered seating), S5) Outdoor-group (i.e., natural, group seating), and S6) Outdoor-random (i.e., natural, random seating).

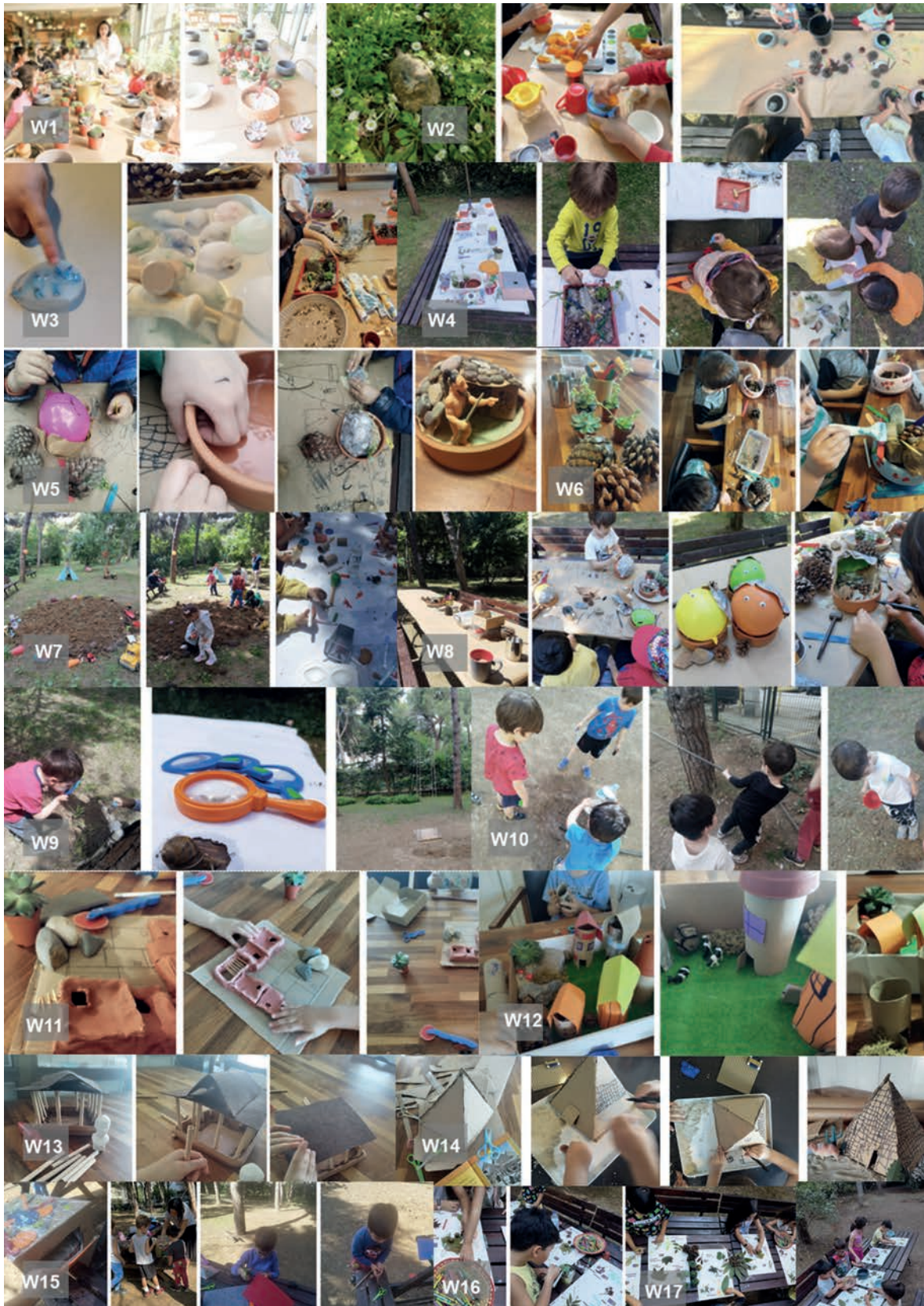


Figure 1. Photos of workshops.

4.5. Types of workshop activities

The workshops included activities such as planting plants, sensory play with ice, working with recycled materials,

and making simple architectural designs with children. The purpose was to emphasize creativity using natural or recycled materials and to

encourage children to make something with their own hands rather than solely being exposed to ready-made objects. For example, in the workshop titled "Design Your Own Garden," the children created their own gardens in tiny containers using natural materials such as soil, plants, stones, and pinecones. While the researcher generally chose to create content with natural materials, she was also involved in making other play materials, such as small model buildings for a workshop titled "Little Architects." The main selection criteria of the activities for workshops were to include both variety and comparability, allowing children to play across different settings in order to have subjective observation. The activities used in the workshop were categorized into four activity types with reference to the Parten-Smilansky Play Scale (Smilansky, 1968) and the play categories of Fromberg and Bergen (2006). The Parten-Smilansky Play Scale consists of social play (solitary, parallel, and interactive play) and cognitive play (functional, constructive, and dramatic play). Fromberg and Bergen, on the other hand, divide play into the following groups: functional play involving repetitive actions such as rolling a ball or stacking blocks; constructive play focusing on building and creating with materials such as blocks; dramatic play involving creative role-playing such as playing house or being a superhero; sociodramatic play involving group play with a story or theme; rule play involving structured play; physical play involving active physical actions; and imaginative play such as drawing, painting or music. The four activity types used to categorize the workshops were: A1) Constructive (e.g., building), A2) Play with rules (e.g., board games), A3) Physical (e.g., physically active), and A4) Creative play (e.g., imagination).

4.6. Observation procedure and the coding of observed behaviors

During the workshops, through various types of activities at different sites, children's autonomy-related behaviors were recorded with a pre-designed coding scheme to keep track

of autonomy-expressive behaviors during play. In the content analysis of children's behaviors observed in each workshop, their patterns of behaviors were recognized and coded into tentative categories by the researchers. After completing all workshops and initial analyses, seven common categories were chosen and children's behaviors in each workshop were reevaluated based on these seven criteria: 1) the child-parent distance (e.g., how far away the child could comfortably stay from the parent), 2) the level of concentration (e.g., how often they would check whether the parent was there, how long they could concentrate without noticing anything), 3) creativity (e.g., how long they could create and express original and creative solutions), 4) Joy (e.g., how much time they could enjoy), 5) free movement (e.g. how easily they could move around freely), 6) independent decision (e.g., decision-making free from parental control), and 7) voicing (i.e., vocalizing and expressing of opinions). The researcher rated the children's play behaviors in each workshop according to the above seven criteria using a 7-point scale, ranging from 1 (Not at all) to 7 (Excessively), by examining her field notes, photos, and videos. Table 1 presents the resulting observed play scores for each workshop. The identified autonomy-expressive behaviors were compared across different "space categories" (S1-S6 as described in Section 4.4) and workshops.

4.7. Behavioral mapping procedure

The observations during the workshop and those made just after the workshop were handled differently in this research. Since free time following the end of the workshop was a very convenient time to record the children's free choices of space, this particular time was utilized to document the children's spontaneous play and the use of space. Typically, the researcher participated in the planned workshop activities together with the children for about 40 minutes. In the free time after the end of the designed activities, the observation of the children's activities

continued for another hour. The locations where the children spent a longer time were monitored in four separate 15-minute segments.

A mapping technique was used to record geographic information. Behavioral Mapping is a data collection technique used in the field of environmental psychology to record behaviors that occur in a specific setting to understand people-place interaction. It was originally developed by Ittelson et al. (1970). The reason for this strategy was to understand the pattern of the use of space and record the exact location the children preferred to use by their own initiative. Firstly, the site map was divided into 5 m x 5 m imaginary square grids by northings and eastings lines to indicate the size of the area in the mapping process. During each 15-minute recorded session, the points in the space where the children spent the most time were specifically identified and marked on the maps.

4.8. Research ethics

Ethical approval was obtained from the Yeditepe University Ethics Board of Social Sciences and Humanities, Meeting Decision No. 02/2025, dated 17.02.2025 (Item 3). Informed consent was obtained from all parents prior to the study.

5. Documenting the space of children's play

Figure 2 shows the spots where the children chose to spend time during the 15-minute observation sessions following the workshops. This mapping in Figure 2 emerged out of an overall analysis in which children's movements in these observation sessions across all the workshops were overlapped and superimposed. In the map, the points at which more time was spent were expressed graphically in larger circles.

The frequency of the children's choices of the same place, as well as how long they stayed at that same place, was particularly significant information. The observations revealed that the two kinds of data were correlated. Through the mapping, the children were found to stay in the places of their choice for longer periods compared to the ones they were asked to be in. This suggested that they were able to concentrate more on their activities in their chosen places.

Workshops No. 16 and No. 17 were taken as sample cases to illustrate mapping and spatial analyses here. Both workshops took place at a private garden located near a park, in a 25 m x 60 m green area in Istanbul, Kozyatağı. For mapping purposes, the garden

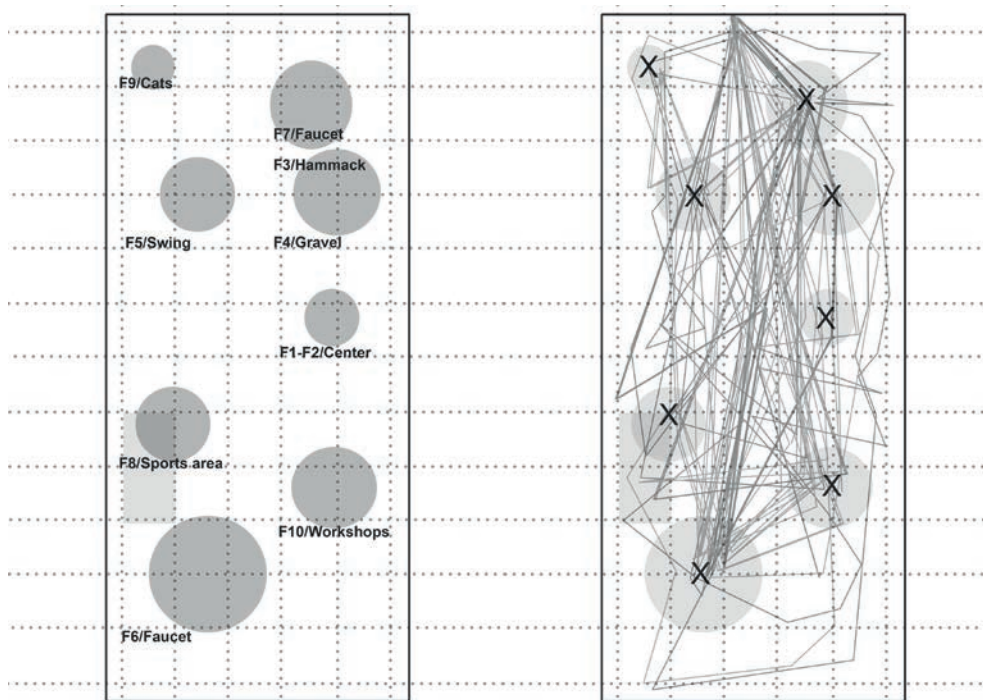


Figure 2. Time sequence mappings.

was divided into grid lines of five meter intervals. There were pine trees in all the intersections of grids, as shown in the sketch illustration in Figure 3.

Variations in seating arrangements, structure, and natural elements were observed in this garden. Figure 3 illustrates the area where Workshops No.

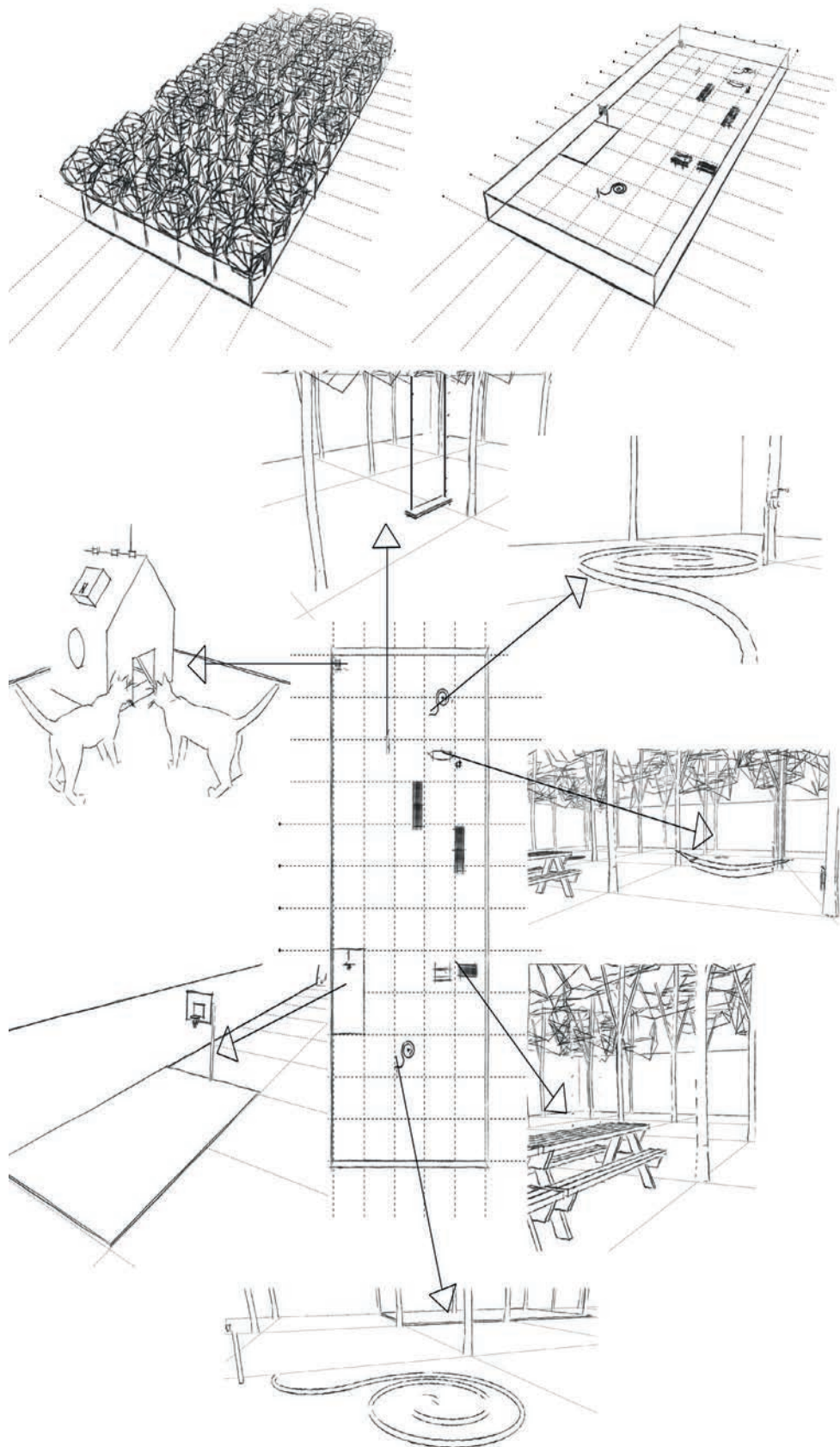


Figure 3. Sketches of outdoor workshop areas.

Playing children: Documenting autonomy-supportive space using an architectural-psychological method

16 and No. 17 were held, depicting the spots in which children were particularly interested. While each workshop had a unique impact on the study, the workshops 16 and 17 were deliberately conducted at the same space to capture the repeating pattern to check the consistency of the observations.

The spots marked as F1 and F2 in Figure 3 were in the central area of the Kozyatağı garden with a long line of joined tables, where children's movements tended to be at ease, especially for the workshops with many children. Spots F3 and F4 were where the hammock was found and became a natural entertainment point where children could concentrate and willingly spend at least half an hour before or after the workshops. A simple wooden swing (F5), a faucet that did not usually run (F6), and a hose that usually had no water (F7) are also marked on the map. Of these, F5, where a simple swing tied to a pine tree with a long rope was found, was a natural spot where children could easily spend 15 uninterrupted minutes before or after the workshop to concentrate and have fun. They could spend time here without realizing how far away they were from their parents or what they were doing. This spot, which allows a lot of free movement, was highly preferred by the children.

Since the valve of the tap marked F6 was usually closed, there was very little residual water coming from it, and within the entire garden, this was the point where children chose to spend their time the most, and where they played with one another. Similarly, the hose with the valve marked F7, which was also usually closed with very little water left, was something with which children could play for a very long period, up to one or two hours. Sometimes, when the valve was open, children concentrated so much that they were not aware of any other stimuli. They would take the initiative and play with water in a state of ecstasy all day long, rarely checking with their parents. The concrete area marked as F8 had a simple basketball hoop. Children mostly used this spot as a giant drawing area where they could scribble with chalk and draw on the ground. The fact that

it was a very large drawing area with no defined boundaries allowed them to express themselves as they wished. F9 was a cat care area where kittens are kept together, enclosed by a light wire cage. This area was of great interest to children before and after the workshop. The spot marked with F10 was the shadowy area where workshops were held with smaller or average numbers of children. Meanwhile, the parents were stationed closer to the children due to the spatial features. They inevitably interfered with the workshop activities and the children due to their proximity, thus negatively affecting the concentration of the children. The variations in parents' seating arrangements were linear, group, clustered, and randomized. Figure 4 presents the photographs of marked areas on the map and the seating arrangement found in each area. When the seating patterns were analyzed one by one, it was discovered that in the linear seating arrangement in the center, where only the children could sit for the workshop and the parents had to clear away, children would behave differently as they could make mistakes more easily and therefore engage with their own activities better.

As described above, a number of spots were found to invoke children's curiosity, encourage engagement, and help the children to focus on their activities for longer periods of time. These spots tended to be rich in natural materials and textures, unstructured, imperfect, but persistent. They are the kind of places that offer children a plenty of surprises and open-ended possibilities, thus encouraging their exploratory and spontaneous actions. In such environments, children are more likely to take initiative and navigate their environment with minimal external guidance. Thus, the mapping and its spatial analysis suggest that certain physical environments can play an important role in enhancing both concentration and autonomy in children, and that the development of concentration and autonomy takes place in parallel through space.

6. Findings

This study specifically examined how spatial dynamics supported autonomy in the context of play. The results

suggest that specific spatial features, both intended and unintended, play an important role in promoting autonomy, not just the general distinction between indoor and outdoor spaces. The study demonstrated how parents' location relative to the children's, as well as the emergence of unexpected play spaces, could significantly influence children's engagement. These findings suggest that it is not only the design or planned function of elements such as fountains,

hammocks, swings, or their placement in the environment that shapes play experiences; rather, play itself actively transforms space, demonstrating that autonomy not only responds to the physical environment but also contributes to the spatialization of play. Figure 5 shows the differences in observed behavioral outcomes (mean scores across different workshops) by five space types (S1. Indoor café; S2. Indoor house; S3. Outdoor-linear; S4.

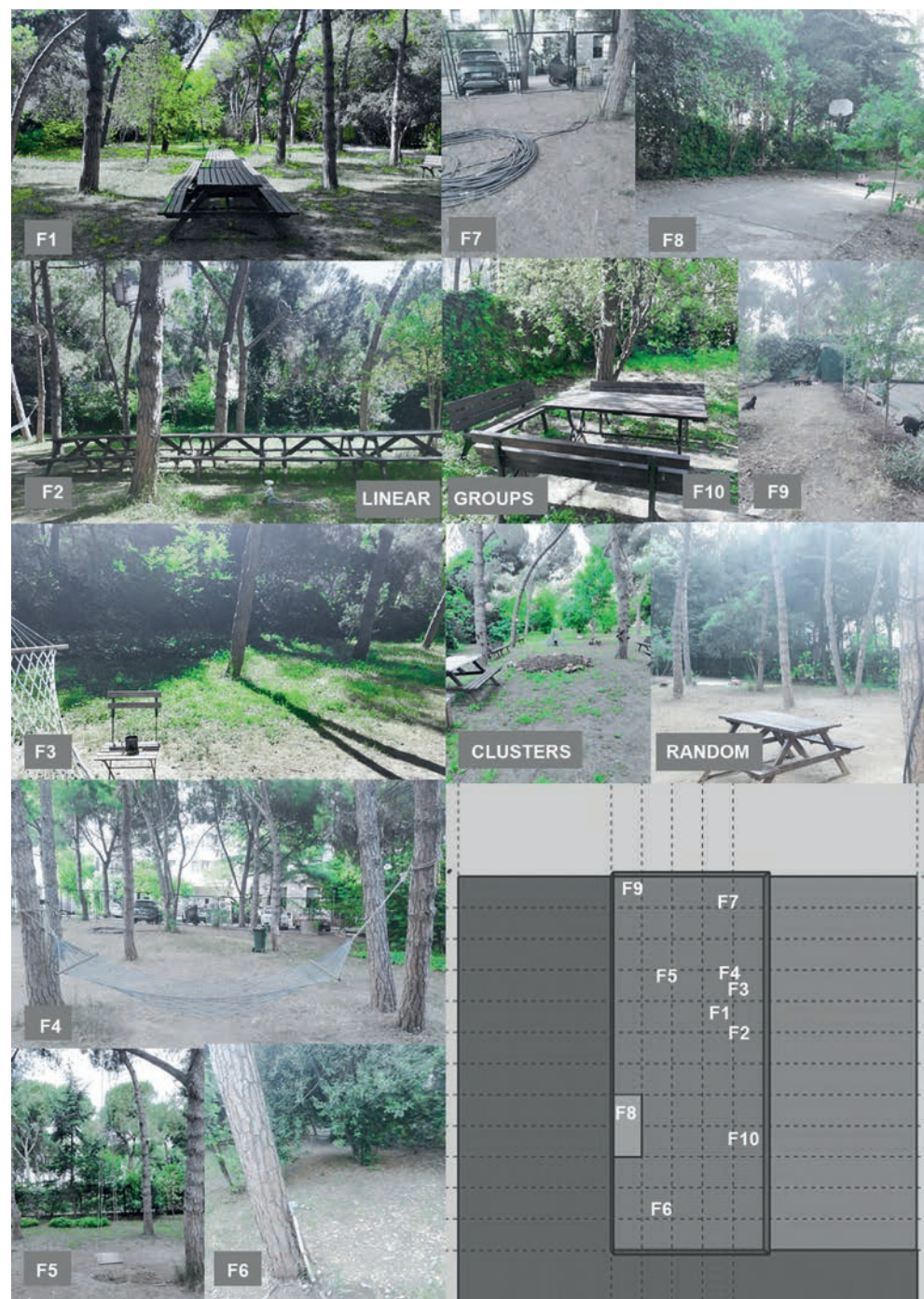


Figure 4. Photos of marked areas in outdoor workshops.

Playing children: Documenting autonomy-supportive space using an architectural-psychological method

Outdoor-cluster; S5. Outdoor-group; S6. Outdoor-random). The contrast between the indoor spaces and the outdoor spaces is striking in Figure 5, suggesting that children's behavior adapts markedly in response to changes in the spatial environment.

Furthermore, observations of the same behavioral patterns across different types of workshops held in the same type of environment suggested that spatial factors, rather than workshop content, considerably influenced the children's creativity and autonomy-expressive behaviors. The qualitative, structural analysis of play environments highlighted core patterns in how different environmental elements framed children's participation and behavior.

6.1. The role of parental proximity in autonomy

The parents' positioning strongly determined how the children's behaviour displays autonomy. In enclosed indoor spaces such as the one used in Workshop No. 1, children's autonomy was constrained as they often sought approval from nearby parents. Limited space and parental proximity restricted their independent exploration. In contrast, outdoor workshops such as No. 2 and No. 4 allowed children to move away from parental supervision, encouraging increased autonomy and self-directed play. In addition, the highest levels of joy, concentration, and autonomy were recorded at locations further away

from parents, highlighting the positive impact of distance on children's autonomy. Defined environments, such as fenced areas, supported autonomous behaviors by contributing to children's sense of safety.

6.2. The impact of indoor and outdoor spaces on autonomy and creativity

Workshops held in open spaces consistently resulted in higher levels of autonomy, self-expression, and creativity. For example, Workshop No. 7, held in a large open space, recorded the highest levels of independent play and creative expression. Similarly, Workshops No. 9 and No. 10, which involved free play in a fenced outdoor area, showed that semi-enclosed spaces could also encourage autonomy by allowing freedom of movement while maintaining structure. A positive association was observed between the characteristics of the space and the children's concentration, which in turn enhanced creativity. Children who were immersed in play without feeling observed exhibited more confident and autonomous behavior. This was particularly evident in natural settings where children felt less closely followed.

6.3. The impact of familiarity on comfort and autonomy

Familiarity with a space, as seen in Workshop No. 3, enhanced comfort, but did not significantly increase autonomy due to spatial constraints

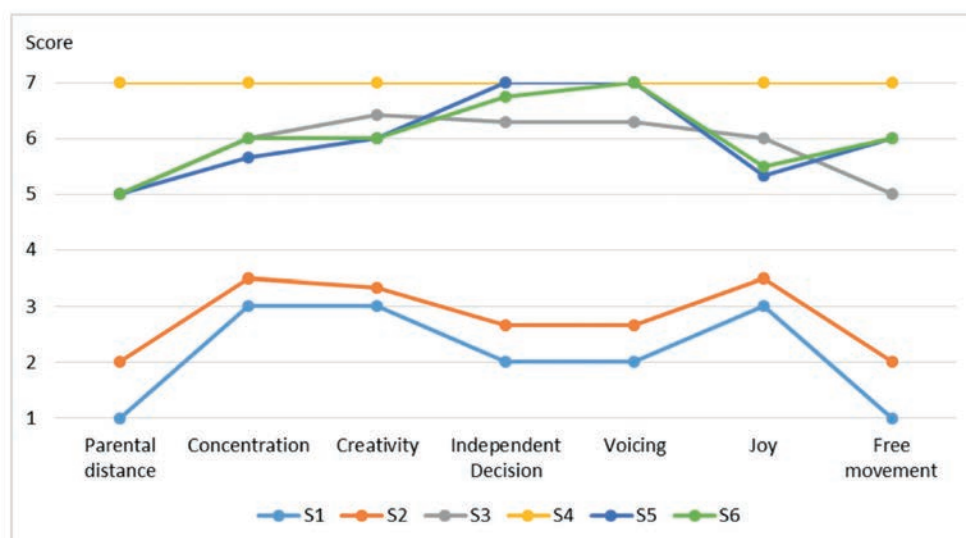


Figure 5. Observed autonomous behaviors by space type.

similar to those in Workshop No. 1. While familiar spaces can increase comfort, they do not necessarily promote independence if physical limitations persist.

6.4. Unstructured natural environments and open spatial configurations

Workshops with more unstructured natural environments, such as No. 7 and No. 9, encouraged spontaneous creativity and autonomy. Flexible seating arrangements, such as those found in Workshop No. 15, also encouraged more movement, self-expression, and creative engagement. Open outdoor spaces without such rigid boundaries as ceilings provided sensory stimuli that enriched play and supported creativity.

6.5. Spatial variables related to autonomy

The main spatial variables positively associated with autonomy were the following:

- 1. Spatial distance between parent and child: Increased distances were associated with higher autonomy, as shown in the spatial mapping of joy and concentration.
- 2. Spatial openness of the environment: Open spaces consistently facilitated autonomy compared to closed indoor spaces.

These relationships were clear in time sequence mapping, where autonomy was highest at spatial points far from parents.

7. Discussion

Childhood is a precious and irreversible time. Children's increasing mastery of autonomy is essential to their development, and in this process, it is crucial to provide them with a supportive environment, physically as well as socially. As play activities allow children to express themselves easily and let them be who they want to be, the provision of autonomy-supportive play space is of particular importance. Therefore, the main goal of this study was to understand the relationship between space and autonomous play. For this purpose, both theoretical inquiry and observational research

were conducted. The findings supported the idea that children's interaction with space during play contributes to their autonomy. Autonomy in children was found to vary depending on the space, and the setting that encouraged autonomy was the one where children could play outdoors, but safely. There also seems to be a positive connection between children's concentration, autonomy, and creativity. The structured play space, in which children were watched and often corrected by parents, decreased autonomy.

It appears that settings with natural elements not only promote children's creativity and autonomy but also create a safe environment with soft ground such as mud, soil, sand, and other soft elements such as leaves and gravel. The safety of the environment also seems to relax the parents, enabling them to stay away and intervene less. These natural elements also tend to present unexpected moments, such as the sudden fall of leaves or insects passing, which in turn bring out children's instinctive spontaneity in play, with the contribution of the lack of spatial limitations like ceilings or walls. Both the two-dimensional and three-dimensional constraints in indoor spaces, i.e., relatively small spaces, were found to produce much more negative results for children in terms of autonomy, compared to outdoor spaces without such constraints.

Research had previously shown that nature could improve people's ability to pay attention and concentrate (Faber Taylor et al., 2001; Ohly et al., 2016; Wells, 2000). This study on the observation of children's play in the workshops has verified the improvement of concentration, which is one of the important indicators of their autonomous play. Regarding the distance between the parent and the child, the findings suggest that a certain seating arrangement where parents can be stationed at a distance or without a direct view of their children can facilitate children's autonomous activities. It may also be important to provide an environment that takes parents' attention away from their children. In this respect, the outdoor environment with its natural elements may be ideal for parents as well

due to its restorative and involuntary attention-catching effects (R. Kaplan & Kaplan, 1989; S. Kaplan & Talbot, 1983). The present study shows that open, natural environments support children's independent and creative play.

This observational research was conducted in Kozyatağı, Istanbul, mainly with children from middle-class families. Moreover, mothers of the children who participated in the workshops were highly educated. The authors are aware of the need to take cultural background into account in the definition of autonomy, as Kagitcibasi (2005) emphasizes. Future research can focus on children from different socio-cultural backgrounds to see the influence of demographics on parental attitudes and children's behavior related to autonomy.

The significance of the present research lies in the documentation of children's behavior in naturally occurring play settings. This field research documented the interaction between different children, different physical settings, and different play activities. Across the different combinations of these variables, common patterns emerged; children's creativity and autonomy-related behaviors showed a pattern of increase in outdoor space. Thus, the findings from the observations and environmental analysis reinforced the idea that physical environments can influence children's autonomy and creativity. However, the present research is qualitative in nature. So, the conclusion drawn is tentative. To prove the causal effect of the physical environment on children's autonomy and exclude the effect of play activity, the use of a stricter experimental design and inferential statistics is required in future research. Nevertheless, the architect-psychologist collaboration in the present study and the resulting use of behavioral research with architectural visual documentation of space should serve as a contribution in both fields. Further collaborations are encouraged for architectural and environmental psychological research.

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Cities as playgrounds: *Oyun İstanbul*¹ as a case study

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Abstract

This paper introduces the transformative initiative *Oyun İstanbul*, which aims to make playing an integral part of urban life in Istanbul. The paper highlights the decline in outdoor play in modern cities and the need for sustainable, inclusive, and accessible spaces that encourage social interaction and physical activity. Prioritizing children's right to play, the *Oyun İstanbul* initiative aims to transform Istanbul from a city of playgrounds into a playable city where public spaces are designed in collaboration with children and young people. The paper demonstrates how participatory design encourages community involvement and improves the urban environment through a range of pilot projects. The study emphasizes the importance of integrating nature into play, creating inclusive public spaces, and using tactical urbanism approaches to provide safe, enjoyable, and diverse play experiences. Ultimately, the *Oyun İstanbul* movement serves as a model for cities worldwide, advocating for a holistic approach to play that enriches community life and supports children's developmental needs.

Keywords

Equal play, Nature, Play culture, Playable city, Safe play.

1. Introduction

“When I think back to my childhood, starting from the year I began school, I remember always playing outside after I turned five. In the summer, we wore Tokyo slippers [2] in the heat. I didn’t like playing house. So it was clear even then that I wouldn’t like housework. We played dodgeball or tag outside. I also remember playing hopscotch and jumping rope. I think I played hopscotch the most, which consisted of a series of linear squares and two side-square blocks scattered between them. We played five stones and a game with a rope in our hands. When we went to the beach for five stones, we took care to collect smooth, round stones, and everyone had their own stone. I also collected marbles. In the Aegean, marbles are also called acorns. And another name, cicoz, was what my father, who grew up in Cihangir [3], called his marbles. Even now, I collect cicoz in a jar at home. Don’t ask me why, because I don’t know. I remember collecting Fruko [4] crown caps and playing games with them. How happy we were when we popped each other’s caps. Of course, this last one was a game I played with the boys. I also played soccer with them, but I remember that because I was a girl, they counted my two goals as one. I would beat some of them up if I got angry.”

Nilgün Günaydın, Being a child in the late 1960s and early 1970s, Blue Days [5]

The 1960s, 1970s, 1980s, even the 1990s... Years when playing outside the front door was a fundamental part of life (Bornat, 2025). Once a common activity for communities, it has gradually disappeared with the advent of the 21st century. However, play, an important part of human life, has been for centuries not only a fun leisure activity but also an element that supports social, emotional, cognitive, intellectual, and physical skills. It creates fertile ground for creativity and problem-solving. And most importantly, it creates environments for socialization. Modern city life and its challenges, especially in recent years, have led to a significant decline in the daily physical activity of all citizens. To counter this decline, there is an urgent need for sustainable,

accessible, inclusive, safe, and creative solutions. Promoting an active social life and reversing the sedentary lifestyle that causes health problems such as childhood obesity and screen addiction has become a social responsibility. Efforts undertaken under this responsibility have led to the implementation of a new model focused on play and physical activity to create a more livable city in Istanbul: ‘Oyun İstanbul’.

With the aim of developing and diversifying opportunities for play and physical activity, *Oyun İstanbul* set out on the premise that a city better suited to children is a better city for everyone. It set as its fundamental goal the evolution from a city with playgrounds to a playable city. Since 2019, *Oyun İstanbul* has been conducting research, production, and collaborations to make Istanbul a city where everyone, especially children, can fully enjoy their right to play, as stated in Article 31 of the UN Convention on the Rights of the Child. Working in collaboration with all citizens of Istanbul, efforts have begun to improve play opportunities in public spaces for children and young people in the city. At the same time, past successes and failures have been examined, and inspiring developments and ideas have been encountered on the path to becoming a fully playable city.

2. Inspiring developments and ideas

In 1943, during a period of increased resistance to the Nazi occupation of Denmark, *Skrammellegepladsen* (Junk Playground) opened in Copenhagen’s Emdrup district (Frost, 2010). *Skrammellegepladsen* was part of *Emdrupvænge*, a large housing project with over 700 households (Dighton, 2020). Created through the collaboration of Danish landscape architect Carl Theodor Sørensen with playworkers Jonas Bertelsen and Agnete Vesteregs, this area was minimally designed to reflect elements of rural Denmark (Henriksen, 2006). At Emdrup, nothing was static or expensive. It was filled with reusable junk – wood, rope, canvas, tires, wire, bricks, pipes, rocks, nets, logs, balls, abandoned furniture, wheels, vehicles, and an unimaginable assortment of other things (Dighton, 2020).

After Marjory Allen traveled to Denmark in 1946, this creative idea spread to England (Highmore, 2013). As Allen noticed, the junk playground, with no play restrictions, gave children more space to shape their own games rather than focusing on rigid play structures. After returning to England, Allen promoted the idea of adventure playgrounds by asking the question “Why Don’t We Use Our Bombing Ranges Like This?” in an article of the same title in *Picture Post* magazine (Wilson, 2014; Allen, 1946).

Allen was very impressed during her visit to Emdrup and by the charismatic playworker Bertelsen (Robinson, 2021):

“I was completely swept off my feet by my first visit to Emdrup playground. In a flash of understanding, I realized that I was looking at something quite new and full of possibilities. There was a wealth of waste material on it and no man-made fixtures. The children could dig, build houses, experiment with sand, water, or fire, and play adventure and make-believe games. They were also fortunate in their leader, John Bertelsen. A trained nursery school teacher and ex-seaman, he was a great man, a philosopher, and a poet. His imagination, confidence, and insight made the whole experiment an outstanding success.”

Bertelsen was Emdrup’s first playworker (Kozlovsky, 2007). He was a member of the Danish Resistance Movement and fought against the Nazis. The children at Emdrup had great respect for him. According to Bertelsen, the playground should provide an emotionally stable and nurturing environment for the children who use it. By placing responsibility in the hands of the children playing at Emdrup, he aimed to develop their social skills and independent thinking abilities. As Bertelsen said, children’s play was not what adults saw, but what the child experienced (Bertelsen, 1972). This sentence also strongly emphasized the importance of free and street play even then.

Allen established the Lollard Street Adventure Playground in south London, and others followed it. A form of free play, often led by children, de-

veloped in bombed-out areas. These attitudes towards play were in keeping with the political and social context of the time. They represented the freedom and optimism for the future that communities were fighting for (FCDO, 1971). These types of playgrounds, which were not overly controlled, gave children the opportunity to explore and interact with each other.

However, over the years, playgrounds became more formal. These types of areas were also standardized as “adventure playgrounds”. The concept of a playable landscape, which had once guided them, succumbed to equipped playgrounds.

By the 1960s, the fabric of city centers had visibly deteriorated. Many cities lost their residents to the suburbs. Perhaps the most striking example of this situation was in New York City, where Jane Jacobs published her book *The Death and Life of Great American Cities* in 1961 (Jacobs, 1961).

Jacobs vividly described life on the streets of her own neighborhood, Greenwich Village. Jacobs’ descriptions of the local area included children playing. She even devoted an entire chapter to them in her book. For Jacobs, children represented the life of the city, and the streets were the best places to represent it. Here, they could play freely under the supervision of neighbors and others around them, and at the same time they were safe.

However, over time, society’s approach to raising children has changed significantly (Tranter, 2015). Today, most parents do not think like Jacobs. What has changed in the intervening half-century? Did changing urban planning lead to unsafe streets, which in turn led to more helicopter parenting? Or did helicopter parenting, by preventing children from playing in the streets, make the streets less safe?

On this subject, researcher Tim Gill, in his book *No Fear: Growing Up in a Risk-Averse Society*, states that play has been harmed by an increasingly risk-averse approach. This is because it restricts children’s play, limits their freedom of movement, and prevents them from exploring the world. In his book, Gill argues that in a world where adult control is increasing, there is a need for

an approach that balances protecting children from real threats with providing them with learning opportunities (Gill, 2007).

In his book *Urban Playground: How Child-Friendly Planning and Design Can Save Cities*, published in 2021, Gill argues that children's status in urban planning should be elevated and that cities should be viewed through their eyes (Gill, 2021). This argument is entirely parallel to *Oyun İstanbul*'s fundamental goal.

Motivated by these developments and ideas briefly mentioned above, five goals were set out, encompassing the actions needed to achieve a playable, play-friendly İstanbul (IMM, 2022; Karaulan Sozuer & Seckin, 2025):

- Transforming into a Playable City
- Enhancing the Relationship between Nature and the City
- Providing Equal Play Experience in the City
- Creating a Play Culture in the City
- Playing Safely in the City

3. Transforming into a playable city

In vehicle-priority metropolitan cities, children playing in the streets are confined to specific areas to protect them from death or injury. Planning approaches that restrict children's play are driven by adults' comfort needs. Unfortunately, although those under 18 constitute a significant segment of society, they have neither the right to vote nor the power to influence decision-making mechanisms. Although everyone was once that age, children are rarely mentioned in city planning policies or guidelines.

Therefore, it must begin by defending children's rights, including their right to participate. This understanding allows children to act as effective partners and participate in the process. This is one of the most important conditions for transforming a city into a playable one. In this context, areas designated for children to play should be prioritized in planning.

According to this approach, first, children and young people in İstanbul needed to be included in decisions affecting the city's built environment, thereby giving them the power to influence change. Within this framework,

work began in different parts of İstanbul to make the city playable, together with young people and children.

3.1. Pilot project: İstanbul Beşiktaş [6] Barbaros square and young skateboarders

Skateboarding has become a global phenomenon today, with thousands of skate parks. It has even secured its place as a sport in the 2020 and 2024 Olympic Games. Skateboarding is an urban activity that contributes to city streets and public spaces.

Despite this, physical barriers are installed in many public areas worldwide to prevent skateboarding. While homeless people are excluded from public spaces with oddly shaped benches and other elements, skateboarders encounter rough surfaces, skate-stopping blocks, and chains that deliberately prevent them from skating (Borden, 2019). On the other hand, street skateboarders, free from the restrictions of disciplined skate parks, argue that cities should be full of movement, pleasure, and joy, a view that points to the fundamental aim of *Oyun İstanbul*.

With this approach, when the redevelopment of Beşiktaş Barbaros Square on the Bosphorus coast of İstanbul was on the agenda, it was decided to bring

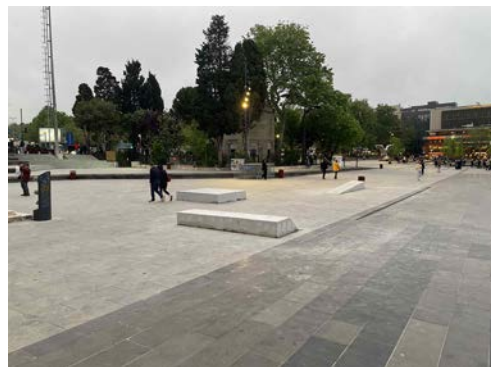


Figure 1. Steps and ramps designed in collaboration with skateboarders in Beşiktaş.

together the skaters who had long used the area to jointly shape the square's design. Meetings were held with young people who currently skateboard in the area and middle-aged city dwellers who had skated there in previous years. Five workshops were held during the design process. Practical discussions were held on topics such as the city, skating, and urban life, not just on a theoretical level. Details were discussed regarding ergonomics for humans, skating areas, and seating areas. During all these studies, the steps and sloped surfaces on the square's ground were re-evaluated in light of the definition of a *skateable urban space*.

A skateable urban space was not a skate park, but rather a skateable area where many activities could be carried out simultaneously within the city. Changes were made to certain points in the square's design for those new to skateboarding, and adjustments to the heights that could be reached on a skateboard were evaluated together.

Detailed studies were conducted to determine what measures could be taken in the area to prevent skateboards from hitting people at speed when they skated beneath. As a result, together with the young people, the goal of making the square a playground for everyone was achieved. The participation of young skateboarders in every stage of the design and production process strengthened social cohesion and a sense of belonging.

3.2. Pilot project: Istanbul's children design parks

The Project created significant value through its participation as an example of the application of new-generation, dynamic methods in children's playground design. Children were accompanied by experts involved in the project's design and production, in workshops where methods and materials suitable for different age groups were used. Initially, the participation processes included sketching and model workshops; during the implementation phase, field checks were also conducted with the children who designed the park.

The first two projects were carried out in Beykoz [7] Akbaba Park and Şile [8] Darlık Park. In both areas, landscape architects first conducted preliminary research and field studies for the project. The current situation was identified. Following discussions with the neighborhood headmen, children from the relevant age groups were invited to participate in the activities through an open call. All designs resulting from the workshops with the children were reported and communicated to the relevant designers. After the designers and producers completed their work to realize the playground that the children had imagined, the projects were implemented on site.

Through this project, children gained the power to shape the spaces they use in their daily lives with their own imagination and creativity. This application enabled children to perceive the urban space as an intervenable, collective area and to see themselves as individuals who can make decisions about the space.



Figure 2. A view of Akbaba Park and the treehouse designed according to children's imagination.

4. Enhancing the relationship between nature and the city

Play is the cornerstone of childhood development. It is where creativity, problem-solving, and social skills take root. However, the harsh reality is that modern childhood is overly programmed and controlled. Amid endless educational activities, children have forgotten how to play without an agenda. The freedom to explore, imagine, and take risks—and with it, the magic of childhood—is steadily diminishing.

Yet nature is the world's greatest playground. Nature is not merely a backdrop; it is a teacher, a healer, and an endless source of inspiration. In nature, there are no rules or instructions. Children take risks and learn to solve problems on their own. They learn by doing, failing, and trying again. They develop courage when they fall and pick themselves up. For example, a child climbing a tree assesses their limits, tests their balance, and builds self-confidence. These are moments that shape not only their childhood but also their character.

One of the best aspects of free play in nature is that it is unstructured and child-led. There is no need for detailed plans or expensive equipment. Perhaps they will collect stones and try to identify them, or perhaps they will just lie on the ground and watch the clouds pass by. Whatever they choose, the important thing is to allow the child to take the lead; to interact with nature on their own terms (Quinn, 2022).

4.1. Pilot project: Nature detective

The main goal of the project is to create nature awareness by encouraging contact with nature through play, sparking a sense of discovery and curiosity. The project makes it easier for children to experience the nature of the city they live in through play. It shows that nature is both a playground in itself and one of the different ways to play in the city, thereby also developing the city's play culture.

The Nature Detective game is played using a booklet containing routes specific to Istanbul's historic groves and urban forests, along with directives to be completed on each route. The book-

lets also contain information about the park or urban forest, as well as various games.

Initially, a total of eight game routes were prepared: four in the parks and urban forests on the European side of Istanbul and four in the urban forests on the Asian side. By the end of 2023, two new routes had been added to these, bringing the total to ten. All routes can be played individually, but on Fridays, they can also be played collectively in a park or urban forest on each side of the city, accompanied by caregivers.

5. Providing equal play experience in the city

In the goal of becoming a playable city, it is very important to design public spaces that are enjoyable, safe, socially inclusive, and accessible for everyone. This goal encourages design solutions that facilitate accessibility and inclusivity. It aims to remove all barriers that hinder individuals from moving around the city.

Children used to play frequently in places such as streets and neighborhoods. Unfortunately, these areas have now become dominated by traffic and parking, with vehicles taking precedence. Many public spaces have chosen to exclude children by banning games such as skateboarding and ball games. Over time, urban planning has limited children's play opportunities to private playgrounds. However, access to these playgrounds was not equally provided to all children in the city.

At this point, a series of actions was taken to create accessible play opportunities, increase social interaction in recreational areas, and provide inclusive recreation services for all groups, adopting a universal design approach.

5.1. Pilot project: HOP [9]

In 2020, a pop-up play area program was launched to provide inclusive play opportunities in Istanbul neighborhoods where recreational areas are limited or fragmented. HOPs quickly transformed streets, sports fields, and small green spaces across Istanbul into temporary play areas.

Play services were implemented to bring play to areas where it was not possible to find a suitable space to

create a park or permanent play area, and where urban pedestrian mobility was particularly difficult for children. These services brought play to neighborhoods with limited access to it, using readily available materials (threads, pieces of fabric, sponges, etc.), recycled materials (cardboard boxes, egg cartons, bottles, etc.), and lightweight, structured or unstructured toys. Accompanied by playworkers, HOPs were set up in suitable open spaces to encourage free play. By HOP, play opportunities in the city were expanded, contributing to the development of children's ability to create their own games and their social skills.

HOPs were also used for post-disaster recovery. After the Kahramanmaraş earthquakes [10] on February 6, 2023, while difficult conditions continued in the region, efforts were made to support children through free play. Between February and September 2023, *Oyun İstanbul* teams reached more than 10,000 children in the earthquake zone with HOP. HOPs are essentially an adaptation of the adventure playground concept that began in Denmark in 1943. As previously mentioned, this approach originated with children in World War II Europe, who created their own games and toys from the debris and rubble left behind in bombed areas. Building on this experience, HOP activities were carried out in

six districts of Hatay, and the impact of play on children's post-disaster recovery process was once again clearly observed.

5.2. Pilot project: Play streets

Aiming to support the physical, social, and mental development of children, especially in disadvantaged areas with limited access to playgrounds, this project has enabled children to play safely and freely on many streets dominated by vehicles, as in the old days.

Selected streets were closed to traffic for a set period and turned into play streets. The project reminded residents of times when children, rather than vehicles, ruled the streets, moving freely and safely.

Within the scope of the project, street pedestrian areas were defined based on feedback and observations from citizens. Temporary designs were implemented on the street using fixtures such as benches, trash cans, and planters. This allowed residents to experience the space while also shaping it according to their own needs.

For many areas temporarily closed off and turned into play streets, residents applied after the implementation for the street to be completely cleared of motorized traffic; if this was not possible, they requested that it be declared a pedestrian-priority street. Some of these streets, defined in the spirit of a *semt pazarı* [11] began to be used routinely as play streets on a specific day of the week. This helped to permanently spread access to play and play culture, while also contributing positively to neighborhood culture.

The first trials of the project were conducted on some streets in Maltepe [12]. Following these initial trials, a significant development took place in Üsküdar [13]. Thirty-nine children who heard about the project and sent letters to the municipality led to the launch of the Play Streets project. In 2024-2025, a total of 15 play streets were established across 12 neighborhoods in Üsküdar in just one year.

6. Creating a culture of play in the city

Globally, the largest investment in children's play in cities is in fixed-equipment play areas. However, a fun



Figure 3. A view from one of the HOPs held in Istanbul.



Figure 4. A view of one of the HOPs set up among the earthquake tents in Hatay.

city should offer children all the play opportunities they need at any time through its parks, squares, streets, and sidewalks.

Beyond designated parks and playgrounds, it is important to provide play opportunities for different age groups in the neighborhood. Play should not be limited to designated parks and playgrounds; instead, play opportunities should be integrated into the streets, so that even the time spent traveling from one place to another can be turned into play and exploration.

Sidewalks, despite being used intensively every day, do not sufficiently utilize their potential as spaces for play and social interaction. It is true that these overlooked areas increase children's confidence and ability to meet others and explore their immediate surroundings. Because they are in front of their homes, these areas provide a greater sense of belonging and freedom of movement than parks do, while allowing play culture to spread throughout the city. Playable streets and sidewalks increase the legibility of journeys between public spaces, from doorsteps to destinations. They allow people to enjoy their journeys more.

6.1. Pilot project: Talking walls

Within the scope of this project, designed to create lively, dynamic, and playful urban canvases in the city's landscape, artists worked on numerous unused spaces across Istanbul to support the image of a playable city.

Inspired by nature and enlivened with colors reminiscent of play's liveliness, the walls began to serve as points of encounter between the city and art. The launch of the project during the COVID-19 pandemic provided significant support to Istanbul artists who were struggling to produce work.

The project's initial works were Esk Reyn's *Colors of the Play*, located on a 200-meter-long, 2,000-square-meter wall surface, and Kien's *Passage of Imagination*, which transformed a train underpass. Additionally, as part of the project, a mosaic mural featuring hand motifs was created in collaboration with 128 mosaic artists to draw attention to a world where children are saved from malnutrition. This mural, in addition

to being a valuable social responsibility project, had a significant impact on promoting the *Oyun İstanbul* movement in the city. All three works were carried out in Kadıköy [14].

7. Playing safely in the city

Ensuring that children, young people, and families can move around Istanbul safely and easily using sustainable modes

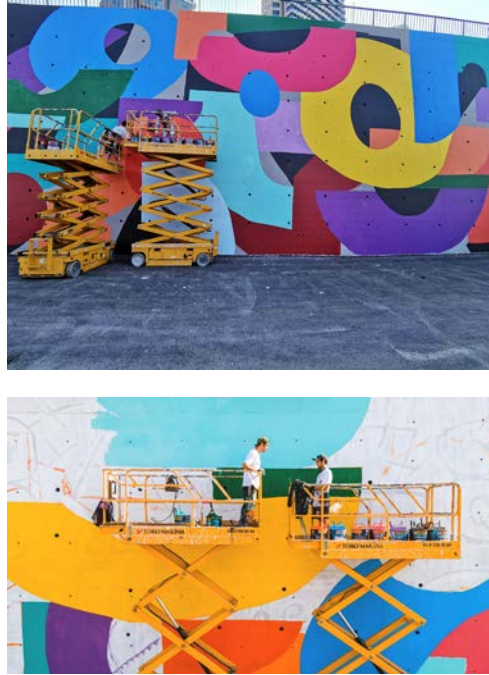


Figure 5. Moments from the painting process of *Colors of the Play*.



Figure 6. North and South entrances of the *Passage of Imagination*.

of transportation, such as walking, cycling, or public transport, paves the way for safe play in the city. Moving and stationary traffic are the biggest enemies of street games. Therefore, it is important to free the streets from the dominance of private vehicles and make them suitable for cycling and walking.

One way to bring children back to the outside world and restore their confidence to play there is to ensure that their five-day-a-week journey to school is one they can make safely on their own. Unfortunately, many metropolitan cities today cannot offer their children the opportunity to walk to school alone, which is a good indicator of freedom on the streets.

7.1. Pilot project: Interactive space applications

The project, organized as part of the *Oyun İstanbul* movement, aimed to enable citizens to experience the space through various activities and to assess the effects of the planned project before its permanent implementation.



Figure 7. The existing condition and two alternative proposals for the site.

The first project was carried out in Tuzla [15] in 2022. Yenice and Aygün Streets were temporarily closed to traffic for two months and cleared of vehicles. This closure was implemented through two different alternatives that would not block access to residential areas or disrupt the transportation system. In the first alternative, only Yenice Street was closed for one month, whereas in the second, both streets were closed for one month.

The streets where the application was carried out were designated as free-play and recreation areas. Thus, these areas, which were not pedestrian-priority, became more accessible to pedestrians. It was presented to local residents as an example of tactical urbanism carried out under the leadership of the local administration.

Throughout the process, announcements were made at regular intervals on social media accounts. Banners were hung in and around the work area, and information brochures were distributed. Communication was established with the neighborhood headman to ensure that the process was communicated to citizens by a local leader. The activities carried out in the area were presented to the public through events held on different days, with the participation of various stakeholders. Information activities continued throughout the events and participation processes. Citizens' opinions were gathered through in-depth interviews as well as online and field surveys.

With the interactive area application, there was a significant decrease in the overall number of vehicles despite changes in vehicle traffic circulation. In contrast, there was a significant increase in pedestrian traffic. The fact that pedestrian density during the week of the application was even higher than pedestrian density on weekends before the application showed that the pedestrianization application was actively used even during the week. The interactive zone application did not cause traffic congestion on streets that remained open to vehicle traffic outside the application area, and no complaints were received from users. On the contrary, accord-

ing to the survey results, 70% of users requested implementation of the second alternative, which proposed pedestrianizing both Yenice and Aygün Streets. The general demand was to slow down vehicle traffic and, if possible, to pedestrianize these streets completely. Ultimately, based on user feedback, vehicle counts, and survey results, the most suitable model for the area was identified and implemented through participation.

7.2. Pilot project: Safe school streets

One of the projects where tactical urbanism methods were most effectively used in the field was the Safe School Streets Project. The applications carried out in Üsküdar constitute an innovative urban design intervention aimed at increasing children's independent mobility and improving the quality of public spaces in the city. As an alternative to traditional vehicle-oriented school environment arrangements, applications that consider children's daily mobility as a design parameter have developed different pedestrian-priority spatial strategies across different school areas.

In 2024, as part of the applications covering the surroundings of three schools. Sidewalks were widened, waiting areas were redesigned, and urban furniture and landscape elements were integrated to transform the school fronts into safe public spaces. Physical interventions across all three areas increased the number of children playing by 6-fold, public space usage by up to 4-fold, and pedestrian mobility by up to 40%. By these measures, school routes are no longer merely transit routes. They were transformed into spaces where children could interact socially, play, and spend time safely.

8. Evaluation

The *Oyun İstanbul* movement, briefly described in this article, has approached play and play culture as a value to be considered holistically since 2019. It brought a different approach to society's needs, demands, and expectations. Significant progress has been made in enhancing playability in recreational areas, with the goal of making İstanbul

a playable city. Through many strategic projects, including the ones described, a more accessible and inclusive play experience has been provided in the city.

The projects implemented clearly demonstrated that different solutions were needed in different areas of İstanbul. In this context, in addition to the inventory of play areas and play area transformation studies, and the pilot projects described above, many projects were implemented, including Girls in the Park and Play Spreads Across the City by Play Houses. The Playground Design Guide and İstanbul Play Master Plan were prepared. As part of the *Oyun İstanbul* initiatives, numerous sports events were organized, including orienteering and hiking for all age groups.

The relationship between the city and nature was strengthened through games and playgrounds integrated



Figure 8. Before and after Yavuztürk school district, in Üsküdar.



Figure 9. Before and after Kirazlıtepe school district, in Üsküdar.

with nature. Significant steps were taken to develop environmental awareness and increase nature awareness among both children and other users. In addition, monitoring and safety inspections of playgrounds in city parks began to be conducted in accordance with standards. Natural play areas were created through transformation workshops. In various parks on both sides of Istanbul, areas were created where children, accompanied by play facilitators, could develop their own games in all seasons. Knowledge was accumulated to develop special play area designs for individuals with autism, nurseries, and daycare centers, and the first examples in Istanbul were implemented.

Projects produced with a tactical urbanism approach created flexible, effective, and quick solutions in play areas based on user feedback. Projects produced based on user opinions or designed directly using children's



Figure 10. Before and after Altunizade school district in Üsküdar.

imaginations increased the value of public spaces while also helping children develop their social and mental skills.

All these projects go beyond being pioneering projects for the *Oyun İstanbul* brand and vision; they also serve as a source of inspiration for many cities around the world. Through the steps *Oyun İstanbul* is taking towards becoming a playable city, a valuable body of knowledge is beginning to take shape to guide all relevant institutions. However, the need for play is so universal, its reflections so varied, and the obstacles it faces so complex that achieving collective and sustainable success without inter-institutional coordination is quite difficult. Therefore, movements such as *Oyun İstanbul* need to be supported and developed through international cooperation and inter-institutional collaboration. Only then can we approach playable cities that are truly child-friendly and offer opportunities for play in every corner, all around the world.

Endnotes

[1] *Oyun İstanbul* can be translated as “Play Istanbul” into English and “Juego Estambul” into Spanish. Throughout this article, it has been used with its original name.

[2] Tokyo slippers or flip-flops are a durable and affordable style of flip-flops, typically made from a spongy, soft rubber material, available in either thong or single-strap designs. Known for their non-slip properties on wet surfaces, these lightweight flip-flops are frequently chosen for the beach, pool, and home, and are also recognized as a nostalgic childhood memory in Turkey.

[3] An Istanbul neighborhood known for its bohemian culture, mostly inhabited by artists, writers, actors, and foreigners.

[4] Turkish soda brand produced since the 1960s.

[5] Günaydın, N. (2015, July 2). Being a child in the late 1960s and early 1970s. Blue Days. Retrieved November 22, 2025, from <https://nilgungunaydin.me/2015/07/02/altmisli-yillarin-sonu-yetmisli-yillarin-basinda-cocuk-olmak/>

[6] Beşiktaş is a district in Istanbul. It is located on the European shore of the Bosphorus strait.

[7] Beykoz is a district in Istanbul. It lies at the northern end of the Bosphorus on the Asian side.

[8] Şile is a district in Istanbul. It is located on the Black Sea coast on the Asian side of Istanbul, at the eastern limit of the city.

[9] HOP is an acronym formed from the initial letters of the Turkish phrase “Hayalgücü Oyun Parkı,” which means “Imagination Playground.”

[10] The Kahramanmaraş earthquakes were two earthquakes that occurred nine hours apart on February 6, 2023, with epicenters in the districts of Pazarcık and Elbistan in Kahramanmaraş, measuring 7.8 M_w and 7.5 M_w respectively. There was widespread damage in an area of about 350,000 km². The provinces of Kahramanmaraş, Hatay and Adıyaman were the cities that suffered the most damage. According to official statements, at least 62,000 people died, with a total of more than 138,000 people injured.

[11] Semt pazarı, a traditional Turkish market set up once or twice a week in the neighborhood where all kinds of products are sold.

[12] Maltepe is a district in Istanbul. It is on the northern shore of the Marmara Sea.

[13] Üsküdar is a district in Istanbul. It is on the Asian shore of the Bosphorus, between Beykoz and Kadıköy.

¹⁴ Kadıköy is a district in Istanbul. It is on the Asian side of Istanbul, on the northern shore of the Marmara Sea, between Maltepe and Üsküdar.

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Berna Göl is an Assistant Professor in the Department of Architecture at Yeditepe University. Her research focuses on architectural criticism, architectural context, and representation. Her recent work includes design/build practices and architectural photography. She volunteers with Architecture for All Association (HIM) and is part of the music duo *kim ki o*.

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Ceren Işıl is an architect, a doctoral candidate in architecture and a former lecturer in the Urban Design and Landscape Architecture Program at Yeditepe University. Her

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Zeynep Kuban is an Architectural History Professor at ITU and co-director of Turkey's Limyra excavations. She was a guest professor at TU Berlin, BTU Cottbus, and LMU Munich. A corresponding member of the German Archaeological Institute and ICOMOS Turkey, she researches archaeology in context and late 19th to 20th-century art and architecture.

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Nizami Ozcelik completed B.Sc. in Civil Engineering in 2012, and M.Sc. in 2015 at METU. He is currently in the thesis stage of Ph.D. in Project and Construction Management at ITU. With 14 years of private-sector experience, he has worked across various areas of project management on international projects.

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Bhoomika UMASHANKAR

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Dorota WORONIECKA-KRZYZANOWSKA

Dorota Woroniecka-Krzyzanowska is a social anthropologist working on cities, migration and conflict in the Middle East. She held visiting positions at the University of Oxford, Birzeit University and Leibniz-Zentrum Moderner Orient and currently leads the "Made in Iraq" research project that explores architectural and urban

transformations of Baghdad under sanctions.

Kübra YAŞAR

After earning a Master's in Architectural History from Istanbul Technical University in 2017, Yaşar completed her PhD in June 2026. Her works analyze Eastern Anatolian urban evolution and infrastructure in the late Ottoman Era through primary archives, while also developing experiential learning programs for cultural heritage and architectural history.

Contents

Hayriye EŞBAH TUNÇAY • Editor
Participation
(Editorial)

Madhumathi PRABHUKUMAR, Bhoomika UMASHANKAR, Suman BILIGEREPALYA LOKESH
Cost-effective construction strategies for affordable housing in India: A comparative analysis

Nizami OZCELIK, F. Heyecan GIRITLI
Integrated project delivery in the AEC sector: A four-step systematic literature review

Kübra YAŞAR, Zeynep KUBAN TOKGÖZ
Voicing the local interests: Expectations from the Trabzon-Erzurum Road and local demands in the Late Ottoman Gümüşhane

Burak ÖZTÜRK, Yıldız SALMAN
Prize for sheltering: Architectural competitions and displaying the social housing production in mid-century Istanbul

Büşranur ASLAN, Cem BÜYÜKSURAL, Hümeysra BİROL
Reconstitution of the memory: Renovation of the Alsancak Cigarette Factory

Raghad FADHIL, Ghada AL-SLIK, Dorota WORONIECKA-KRZYŻANOWSKA
How decisions are made: Urban and architectural transformations of a modern residential district in Baghdad (1958-2024)

Ceren IŞIL, Burçin BAŞYAZICI, Berna GÖL, Mari ITO ALPTÜNER
Playing children: Documenting autonomy-supportive space using an architectural-psychological method

Yasin Çağatay SEÇKİN
Cities as playgrounds: *Oyun İstanbul*¹ as a case study

