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Editorial

Mehmet Topçu (Editor in-Chief)

JOURNAL of DESIGN for RESILIENCE in ARCHITECTURE and PLANNING (DRArch) has published Volume 5 Issue 1. DRArch commenced its publication journey with enthusiasm and clear goals.

In this issue the first article is written by Seda Buğra Tekinalp, Ayşe Şentürer. The title of this article is “Evaluating public spaces through the concept of other: A heterotopic approach”. This study offers a critical evaluation and an alternative urban reading method for public spaces in the contemporary architectural environment by examining the presence of different identities in different spaces through the concept of heterotopia and its expansions. The exploration of heterotopia as an instrument and its methodological application in the analysis of public spaces highlights the pursuit of culturally resilient urban environments that are adaptable and meaningful for all users. Therefore, the study formulates a systematic evaluation method for public spaces by incorporating a comprehensive methodology that integrates both theoretical exploration and practical observations. This study will contribute to architectural discourse by offering a new perspective on how public spaces can be designed or reimagined to accommodate and reflect the diversity and dynamism inherent in contemporary urban life and offers a pathway for crafting public spaces that are resilient to social and cultural flux while serving as platforms for diverse community engagement.

Another interesting paper deals with theory titled as “Plant selection for rain gardens in mild climates: Suggesting a rain garden design” by comes from Burçin Burcu Doğmuşöz. The research focused on exploring the importance of carefully choosing plants for rain gardens, aiming to help in selecting the most suitable flora and creating visually appealing, resilient, and ecologically important landscapes. For this purpose, Izmir Katip Celebi University was selected as a study area. This study, conducted in Izmir province, will enrich existing literature and provide municipalities with crucial guidance in plant selection in a rain garden project, offering valuable insights.

Thinking and discussing about education has always been one of the priority foundations for DRArch. We are publishing two valuable researches on education. The first one is “Reflective thinking and self-assessment: A model for the architectural design studio” written by Cemile Sanem Ersine Masatlıoğlu and Özge Can Balaban. In this article, the authors reveal and reflect on an enriching pedagogical approach to the traditional architectural design studio. It is acknowledged that students develop comprehensive examination and internalization abilities by developing reflective thinking and self-evaluation abilities that complement each other The fundamental questions are: How can a reading-discussion setup designed to nurture disciplinary literacy in the design studio be a factor in developing reflective thinking ability? How can the systematic peer assessment exercise be a factor in the students' self-assessment and reflective thinking skills as a learning outcome? The results argue for the effects on students' intangible skills. The aim is to contribute to the theory of education by making the model application in the field of architectural design studio accessible and reflective for other educators. The article titled as “Can basic design be the base of urban planning education? A case-oriented quantitative measurement model” written by Dalya Hazar, Görkem Gülhan and Bekir İnce. The study of design is considered as a scientific activity; however, the integration of urbanism with design thought has remained limited, which can easily be observed in the contemporary urban areas, especially in the developing countries. Thus, increasing design thinking ability and the integration of spatial planning should be a priori within urban planning and design education, and thus be practiced preventing the emergence of chaotic urban spaces. The research model is a case study, based on the relational analysis of quantitative data, which quantitatively propounded that the relationship between two different teaching processes is linear and positive.

Rumeysa Tuna Sayın and Fatih Semerci has prepared the article titled as “Analysis of the facade and spatial quality of educational buildings of the first national architecture period: The case of Konya”. In the last years of the 19th century, architects who were under the influence of the nationalist ideas that developed in the last years of the 19th century and were strengthened with the declaration of the constitutional monarchy, led to the emergence of the First National Architectural Period as a reaction. They also considered this period as an eclectic architectural style in which they reinterpreted the facade, plan and ornamental elements of Ottoman and Seljuk architecture with Western construction techniques. Educational buildings are an important group among the new types of buildings constructed in Konya, which has maintained its political and cultural importance throughout history. In this study, the façade and spatial quality analyses of the Sanayi Mektebi, Male Teachers' High School (Dârü-l Muallimin), Girl Teachers' School (Dârü-l Muallimat) and Gazi Mustafa Kemal, Hakimiyet-i

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Milliye and İsmet Paşa Primary Schools, which are among the educational buildings built during the First National Architectural Period and which contributed to the identity of the city of Konya, were examined.

Hüseyin Özdemir's paper "Investigation of social change in cities after participation in cittaslow union in Ordu-Perşembe district" presents a case study of the social changes brought about by participation in the Cittaslow Union in cities. This study on the effects of the Cittaslow Union in the Perşembe district can be considered an important step in promoting sustainability and social participation in cities.

The last article is "Drivers of socio-spatial change in Istanbul: Historical and longitudinal analysis of 5 cases from Bakırköy" written by Sevgiye Sönmez Özdemir and Gülden Erkut. This article aims to reveal the social and spatial change in Bakırköy through time and to identify the drivers behind this transformation. The decentralization of industry and the privatization or transformation of public investments into consumption-focused urban areas through public-private partnerships have also been observed. The study aims to prove that this change in space lays the groundwork for social differentiation.We believe in the strong relationship between the concept of resilience and education, which is necessary when designing the places, cities, and lives of our future. I would like to extend my deepest gratitude to all participants and all our readers for the support they provide to the Journal. And I would like to a special thanks to the referees. We look forward to your comments, contributions, suggestions, and criticisms.

We believe in the strong relationship between the concept of resilience, characterized by the swift recovery from challenges through adaptive capacities, is at the heart of our exploration. DRArch goes beyond the traditional boundaries of resilience design, delving into the uncharted territories of future design in our ever-evolving world. DRArch stands at the forefront of innovation and foresight in the realm of design. As we navigate the complexities of the modern world, our commitment to anticipating the future, embracing sustainability, and integrating technological advancements with inspiration and aesthetics remains unwavering. DRArch serves as a catalyst for collaboration, providing a dynamic forum that bridges existing design knowledge with a futuristic approach. In essence, DRArch is not just a journal; it is a testament to our collective vision for a resilient, sustainable, and inspiring future. Join us on this transformative journey as we continue to shape the narrative of design for resilience, pushing boundaries and fostering a community of building a brighter tomorrow. I would like to extend my deepest gratitude to all participants and all our readers for the support they provide to the Journal. And I would like to a special thanks to the referees. We look forward to your comments, contributions, suggestions, and criticisms.

Best regards...

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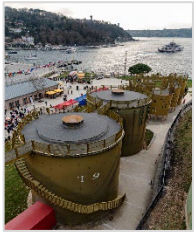

Cover photo: Image copyright ©Sena Özfiliz, Milano, (March 2024). The image on the left is detail "Çubuklu Silos: Abandoned fuel tanks transformed to culture and art space; Çubuklu, İstanbul"

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DRArch's objectives are:

- to question how future building technologies are revolutionizing architectural design, city planning, urban design, landscape design, industrial design, interior design and education,

- to catalyze the processes that lean on interdisciplinary and collaborative design thinking, creating a resilient thinking culture,

- to improve the quality of built environment through encouraging greater sharing of academicians, analysts and specialists to share their experience and answer for issues in various areas, which distributes top-level work,

- to discover role of the designers and design disciplines -architecture, city planning, urban design, landscape design, industrial design, interior design, education and art in creating building and urban resilience,

- to retrofit the existing urban fabric to produce resilience appears and to support making and using technology within the building arts,

- to discuss academic issue about the digital life and its built-up environments, internet of space, digital in architecture, digital data in design, digital fabrication, software development in architecture, photogrammetry software, information technology in architecture, Archi-Walks, virtual design, cyber space, experiences through simulations, 3D technology in design, robotic construction, digital fabrication, parametric design and architecture, Building Information Management (BIM), extraterrestrial architecture, , artificial intelligence (AI) systems, Energy efficiency in buildings, digitization of human, the digitization of the construction, manufacturing, collaborative design, design integration, the accessibility of mobile devices and sensors, augmented reality apps, and GPS, emerging materials, new constructions techniques,

-to express new technology in architecture and planning for parametric urban design, real estate development and design, parametric smart planning (PSP), more human-centered products, sustainable development, sustainable cities, smart cities, vertical cities, urban morphology, urban aesthetics and townscape, urban structure and form, urban transformation, local and regional identity, design control and guidance, property development, practice and implementation.

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Editorial Team

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Research Article
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Evaluating public spaces through the concept of other: A heterotopic approach

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Ayşe Şentürer**

Abstract

This study offers a critical evaluation and an alternative urban reading method for public spaces in the contemporary architectural environment by examining the presence of different identities in different spaces through the concept of heterotopia and its expansions. The exploration of heterotopia as an instrument and its methodological application in the analysis of public spaces highlights the pursuit of culturally resilient urban environments that are adaptable and meaningful for all users. Therefore, the study formulates a systematic evaluation method for public spaces by incorporating a comprehensive methodology that integrates both theoretical exploration and practical observations. The concept of heterotopia, which unfolds through parallel text–space readings, has provided the opportunity for a comparative analysis based on the differences between its definitions and the user profiles and usage practices of public spaces. This study establishes a consistent analytical framework through a meticulously crafted "seven-step view lens" derived from an extensive review of architectural discussions on heterotopias. This innovative lens categorizes heterotopias into three distinct groups according to specific criteria and contexts, facilitating a detailed examination of public spaces' diverse aspects. By systematically categorizing the identified heterotopias, the study not only deconstructs their existing narratives but also proposes transformative strategies for future design interventions. Such categorization allows for a nuanced critique and interpretation of public spaces, potentially guiding the design of urban areas that are more inclusive and reflective of societal needs. These classifications offer a fresh perspective on public spaces, revealing their potential as platforms for vibrant social interaction and cultural expression, thereby contributing to the dialogue on urban resilience. Hence, the multifaceted nature of heterotopia offers a powerful lens for understanding urban complexity, informing a shift towards inclusive, sustainable, and resilient design. Ultimately, the study highlights the role of heterotopia as a method that interrogates the production of spaces coexisting with the 'other,' unravels its dynamics, and proposes an approach for creating dynamic, inclusive, and adaptive public spaces. This study will contribute to architectural discourse by offering a new perspective on how public spaces can be designed or reimagined to accommodate and reflect the diversity and dynamism inherent in contemporary urban life and offers a pathway for crafting public spaces that are resilient to social and cultural flux while serving as platforms for diverse community engagement.

Keywords: heterotopia, otherness, public space, text analysis, urban reading

1. Introduction

In contemporary conditions, where most borders are blurred and permeable, the notion of otherness is an inseparable part of daily life as different identities, temporalities, and spatialities often overlap. Thus, public spaces that accommodate "the other" become a crucial part of urban life. Public space is discussed in the contexts of who the urban space is for, how public the public space actually is, to what extent it enables different identities to coexist, and what elements make the space public. In the realm of architecture, public space holds great importance as it serves as a

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platform for social interaction, cultural exchange, and community engagement (Luo & Guo, 2012). Public space provides an urban environment that enables connections between individuals and contributes to communities' social and psychological well-being. Yet, the fact that there is no exact way to measure or define the quality of public space, makes it challenging to create spaces that are responsive, democratic, and meaningful to all users. This study aims to provide a method to critique, evaluate, and reimage the public spaces through its dynamics.

The space where diverse profiles exist together first emerged in the literature as the "Third Space" in the cultural studies area. Bhabha (1994) defines the third space as a post-colonial discursive space of enunciation where encounters with the other are affirmed and both sides mutually coexist by learning from each other. The spatial equivalent of this discursive space is seen in Foucault's (2008) concept of heterotopia as "other spaces that are simultaneously represented, contested and inverted; a kind of places that are outside all places, even though they are actually localizable." Even if Foucault left the definition of the concept ambiguous, it is embraced as it reflects "the climax of postmodernism: an academic and discursive environment that celebrates above all the concepts of heterogeneity, difference, otherness, and alterity" (Sohn, 2008).

After Foucault, many scholars have further developed the concept with unique insights and interpretations. From the early conceptualization by Foucault to the contemporary discourses on spatial practices and urban interventions, the multifaceted nature of heterotopia reveals its relevance in addressing the complexities of public space design. Going beyond Foucault's initial definition, following the idea of heterotopia, which derives from different theoretical origins and uses of public space, sometimes utopian and sometimes based on the everyday life, relationships, and experiences of the urban dweller, offers a productive strategy for the liberation of the city and public space. Liberated public space implies a participatory, social, inclusive, and culturally resilient space. Pursuing the idea of heterotopia to see how urban and public space has evolved in relation to the dominant system of thought and its current state and vision for the future, to identify how to begin to understand the ongoing transformations of the relationship between the local and the global, offers a productive strategy to investigate these conditions, as rigid binaries such as public-private, urban-rural or local–global; no longer provide appropriate frameworks for analysis. Within the scope of this study, this heterotopia literature is traced systematically to provide a methodological proposal for the knowledge of the other spaces in architectural literature and the production of public spaces welcoming everyone. Investigating heterotopia offers a valuable approach to comprehending the complex layers of urban settings. This study presents a view that situates these concepts within a broader historical context through a detailed textual analysis of relevant literature. To conduct a textual analysis of heterotopias, a system has been established that focuses on the concepts, approaches, and tools in the texts. For the analysis, two main actions were crucial. First, a selection of texts creates a representative sample, with each selected text treated as a distinct case to examine. Second, a method for thoroughly and consistently investigating the chosen texts is implemented. To look at the texts, a framework as a meticulously crafted "seven-step view lens" is utilized, drawing upon an extensive review of architectural discussions on heterotopias and each text was examined through this lens. This framework categorizes heterotopias into three distinct groups based on how they conceptualize heterotopia and how different identities manifest and interact in the urban environment, each defined by specific criteria and contextual nuances, thus allowing for a thorough critique and interpretation of public spaces. The first group includes texts in which formal and typological aspects precede, aiming to institute and maintain a sense of order within the spatial arrangement. In the second group, the focus shifts to everyday life and its dynamics, exploring how spaces of resistance and the 'other' navigate, negotiate, and assert their presence. The heterotopia emerges not from rigid planning but from the lived experiences and struggles of individuals and communities as they interact with the space. The third group is characterized by its transient nature. These are spaces defined by temporal activities or specific programs, which come into being for a particular purpose and cease to exist when that is achieved. They are ephemeral heterotopias, reflecting the constant flow of urban life, capturing intersections of different uses and users.

This process uncovers how spaces of resistance, which are liberating heterotopias, can transform public areas. These spaces challenge traditional limits and offer a place for diverse identities and everyday experiences to connect and coexist. These heterotopias as emancipatory spaces carve niches within the restricted realms of public space for the struggling others. As architectural practice and power dynamics evolve, the characteristics of spaces should evolve, too. Thus, as the relationship between architectural practice and power changes, the qualities of the produced space also change. This study focuses on texts that seek a spatial response to these power relations at the interface between the city and heterotopia and take a position against the other, aiming to develop a critical perspective against the concept of heterotopia through architectural texts. With the knowledge constructed through texts, examining any public space will also be possible. The systematic categorization constituted by the view lens first deconstructs existing narratives and then reconstructs the architectural knowledge to make a reading on public spaces. These readings guide the transformation of public spaces that reflect societal needs, social interaction, and cultural expression. Thus, it makes a significant contribution to the architectural discourse with the alternative way of urban reading, which advocates for public spaces that are not only culturally resilient but also serve as platforms for diverse community engagement, enriching the urban experience for all.

2. Background: The Emergence of Heterotopia

In the post-modern era, there has been a significant shift in the concept of space from a homogeneous, binary, and universal framework to a diverse, heterogeneous, and differential one. The experience of modernity and the structures of modernism moved from a monolithic perspective towards multiplicity and variety during the post-modern period, reshaping discussions around the city and architecture. Concepts of otherness and space escaped the limitations of binary oppositions and universalism, adopting a heterogeneous and pluralistic structure. The term "post" here extends beyond postmodernism to all grand narratives of colonialism, modernism, and structuralism as they are intricately linked. As postcolonial theorist, Bhabha (1994) suggested, "the wider significance of "post"-modern condition lies in the awareness that the epistemological limits of homogenizing ideas are also the enunciative boundaries of the other as colonized, women or minorities."

From the 1970s onwards, the concept of the "other" began to take its place in discussions across architecture, sociology, media studies, and philosophy. The focus on the importance of their presence and representation provided a theoretical environment that makes it possible for concepts like "Third Space" to thrive. Third Spaces are "hybrid sites of cultural negotiation" (Bhabha, 1994) where cultural productivity is situated at this juncture. Understanding the Third Space necessitates looking at the literature of the postmodern era. Recognizing and representing the 'other' first requires critiquing the modern thought grounded on universal knowledge, focusing on a single truth, and basing on the superiority of the majority and hierarchical order within this context. A significant setback in acknowledging the other process is the "false recognition" of them, meaning the groups referred to as 'other' (such as Black, Latin, Indian, and gay) are recognized, but they are all considered the same and represented through exclusion. Bhabha (1994) calls it "recognizable other, as a subject of difference that is almost the same, but not quite."

Bhabha's Third space is not the only interstitial space concept that emerged; a variety of other related concepts have unfolded. Lefebvre (1991) and Soja (1996) approach the 'Third Space' concept as a hybrid space constructed by real and imagined space. It is an "other way of understanding and acting to change the spatiality of human life, a distinct mode of critical spatial awareness appropriate to the new scope and significance being brought about trialectics of spatiality–historicality–sociality." (Soja, 1996). Deleuze and Guattari's concept of 'smooth space' transcends rigid and homogeneous structures, representing a space in constant motion and redefinition. This space is free from hierarchical arrangements and categorizations, suggesting that space is not a fixed entity but a process of constant transformation and reproduction. "Smooth does

not mean homogeneous; quite the contrary: it is an amorphous, nonformal space. It is the space of the refugee and the migrant, a field of vectors (social, economic, historical, political, cultural, aesthetic, and environmental) upon which we ride or slide, like surfing on the crest of turbulence (Deleuze & Guattari, 1987). Another important concept is heterotopia, which was introduced by Foucault. Heterotopia stands out from other concepts in this study due to its emphasis on real space. Post-modern thought revisited encounters with the 'other' and the layered nature of space with a new framework. The concept of otherness transcended cultural studies and became intertwined with the formation and usage of space. This discursive space's physical spatial counterpart can be seen in Foucault's narrative of heterotopia – "spaces where minorities labeled as 'other' in society live; spaces that do not fit into any category, where everyday life is suspended, and are exceptional in nature" (Foucault, 1986). Through heterotopia, Foucault reframes cultural diversity and social dynamics regarding the structure and usage of physical space, bringing the debate directly into the realms of architecture and urban space. Heterotopia becomes a pivotal concept for understanding the cultural richness and diverse experiences in the cultural fields and the architectural discourse.

Michel Foucault's concept of heterotopia offers a radical rethinking of space that holds significant relevance and "offers a name to the decentralized universe of postmodern thought" (Connor, 2015). This concept signifies a critique of utopian visions and serves as a distinctive label for the complex and often contradictory spaces that constitute the 'other' in society. In his essay "Of Other Spaces," published in 1986, Foucault defines *heterotopias* as tangible, real spaces—distinguished from utopias, sites with no real place. Foucault's heterotopias are places that exist outside of all places, yet they are nonetheless locatable. As isolated and penetrative spaces, they juxtapose multiple, often incompatible, spatial, and temporal narratives within a single real environment. Foucault's heterotopias carry significant implications for the analysis and design of urban spaces. They challenge the dominant power structures and conventional architectural norms by providing alternative spaces representing the 'other,' enabling a transformative approach to the urban fabric. As a concept and theory, heterotopias represent the space of the other and speak to intermediary spaces, spaces of resistance, subject-power relations, and the reflections of these relations on space. In heterotopias, we find the marginalized, the sacred, the playful, and the reflective; they are spaces of deviation that bring to the fore what society seeks to regulate or hide.

Michel Foucault's concept of heterotopia holds a significant place in the decentered universe of postmodern thought. Heterotopia, with its inherent heterogeneity and claim to "make visible cultural difference and plurality" (Connor, 2015) for the decentered universe of the postmodern world in which it was born, has offered a name for this world. As a concept and theory, heterotopias represent the space of the other and speak to intermediary spaces, spaces of resistance, subject-power relations, and the reflections of these relations on space. Foucault introduced this concept to the social sciences by defining "spaces that exist effectively outside the usual order, contrary to the imaginary spaces of utopias" (Foucault, 1986).

Michel Foucault's concept of heterotopia is of great importance in the decentered universe of postmodern thought. In his work "Of Other Spaces" (2008), Foucault defines *heterotopias* as real spaces that effectively exist outside the ordinary order. While representing the space of the other, these spaces also provide essential insights into interstitial spaces, spaces of resistance, subject-power relations, and the reflections of these relations on space. According to Foucault, “heterotopias are real places that have existed since the foundation of societies and are like an active utopian counter-place where all real places are discussed, represented and reversed in conjunction with culture.” While utopias represent a perfect society, a homogeneous and pure space, heterotopias emphasize difference. Heterotopia is vital in the sense that it is the “localization, concretization, and representation” (Foucault, 2008) of the spaces of the other. These spaces are the spaces of encounters. Hetherington (1997) defines *heterotopias* as spaces of an alternative order, while Burdett (2000) uses the concept to explain the spaces where discriminatory institutions or social policies are articulated and the technologies of power are most visible. The

ideals of social order are physically enacted. Furthermore, Foucault's concept of heterotopia is complemented by Henri Lefebvre's notion of differential space, which reflects the dynamic and socially constructed nature of space. Lefebvre's perspective aligns with the idea of space as socially produced, emphasizing the importance of usage value over exchange value and laying the groundwork for a right to the city—conceiving spaces that are inclusive, diverse, and aligned with the lived experiences of inhabitants.

3. Heterotopia in Architectural Texts: Developing a Framework (Constructing the View Lens: A Methodological Framework for the Analysis of Public Spaces)

The fundamental change as the recognition, appreciation, and representation of the "other" became a central narrative, and the concept of heterotopia emerged as a spatial concept in the post-modern period, preparing the basis for the idea of creating culturally resilient, adaptable, and diverse public spaces. It becomes evident that the change in "acknowledging the other" requires new frameworks for analyzing public spaces. With its inherent spatial characteristics and ability to reflect the post-modern context, heterotopia offers a powerful tool for this purpose.

Both being in the center of the discussions on "other" and using heterotopia as a conceptual lens, this study attempts to transform heterotopia into a tool for reading and evaluating public spaces. Thus, this approach proposes a methodology that embraces the inherently complex identities and dynamics in urban landscapes, questions the traditional production of space, and offers a pathway toward the creation of more inclusive public spaces.

3.1. The Potentials of Heterotopia

Within the complexity of public spaces, the concept of heterotopia emerges not only as a theoretical lens but also as a practical tool that offers a multitude of potentials for the analysis, design, and reinterpretation of these shared environments. The unique capabilities of heterotopia transform our understanding and engagement with public spaces as a tool for analysis, conceptualization, and evaluation.

3.1.1. Conceptualization Potential

Heterotopia serves as a form of 'spatial archaeology' that enables a deeper understanding of public spaces through their definitional diversity and comparative analysis of user profiles and practices of use. This facilitates: (i) conceptualizing complex situations such as urban rights through the lens of heterotopia illuminates the relations between urban residents and governing in power, and (ii) a framework based on a critical comparison of heterotopic concepts initially developed by Foucault and further elaborated by various thinkers provides a rich epistemological ground for urban studies.

3.1.2. Instrumental Potential

Within the scope of the study, heterotopia becomes a tool for examining a complex system/structure that encompasses many factors such as the dynamics of coexistence in the city, the conditions that establish place, locality, the other, and the balance of power: (i) a tool that tries to explain the ever-changing structure of today's urban practice; (ii) a tool for revealing social exclusion/inclusion and the conditions of the construction of space; and (iii) a new approach to examine private spaces.

3.1.3. Evaluation Potential

By exploring public space through the lens of 'other spaces,' heterotopia allows for a way of analyzing and evaluating within the contexts of order, resistance, and flux. It enables (i) an attempt to define the postmodern narrative's fragmented and pluralistic universe; (ii) the creation of spaces that challenge dominant power and incite emancipatory possibilities.

With these potentials, heterotopia questions the conventional production of spaces and suggests a methodology that embraces the complex identities and dynamics present in urban

environments. Advocating a move towards more inclusive urban spaces, this approach aims to consider not only physically but also culturally, socially, and politically rich environments, showing how heterotopia can serve as an essential tool in the repertoire of architects, urban planners, and social theorists.

3.2. The Potentials of Textual Critique in Architectural Discourse

Architectural texts offer a two-fold benefit: they provide a rich resource for critical, theoretical approaches and serve as a valuable tool for applying and assessing these insights in architectural practice. These texts contribute new perspectives to architectural theory and enhance architectural practice, serving as a tool for fostering critical thinking within the field. Rendell (2021) characterizes texts as "transitional spaces," highlighting their role as a discourse analysis tool that creates a "place" where experiences and imaginaries converge. Through this conceptualization, the examined texts navigate the notion of an inclusive and liberatory public space, employing theoretical research and practical experiences as third spaces for collective interpretation.

Texts develop critical thinking in architecture by adding new perspectives to architectural theory and enriching architectural practice. Rendell (2021) defines text as a "transitional space that provides a place where differently experienced and imagined worlds come together." She developed a practice of configuring textual fragments, in both allegorical and montage modes, to construct architectural criticism. With this conceptualization, researched texts are used as third spaces where theoretical research and practical experiences can be interpreted together while tracing the idea of public space. Another insight on textual critique utilized in the study is Choay's instaurational texts, which she defined as "writings which have the explicit aim of developing an autonomous conceptual apparatus in order to conceive and build new and unknown forms of space." It is "to provide a theoretical support and foundation for spaces, whether already built or projected" (Choay, 1997).

Another important potential for analyzing architectural texts is the ambiguity in defining heterotopia, as left by Foucault. Foucault's lack of a definitive explanation for heterotopia creates fertile ground for diverse research; each of them provides different cases proposing new ways of understanding and creating public spaces.

3.3. Methodology

This study aims to design a comprehensive evaluation methodology for public spaces encompassing theoretical studies and practical applications. Reflecting on such a methodology contributes to the formation of the architectural knowledge process of designing spaces that are open to the 'other.' By examining public spaces through a model that is open to the 'other,' we can utilize the concept of heterotopia as a tool to analyze a complex system comprising various factors such as the dynamics of coexistence within the city, place, local identities, the 'other,' and power balances. The vast amount of research written on this topic over the last fifty years offers diverse focuses and perspectives. A detailed examination of texts that study and evaluate heterotopias has led to the creation of a systematic "view lens" (Table 1) consisting of seven points based on the texts' formation styles, methods of how they handle heterotopias, frequently encountered arguments, and recurring, intersecting, and diverging situations, concepts, and thoughts. Subsequently, a selection of texts related to architecture was curated from the examined heterotopia literature. This curated lens was applied to the text selection, and the texts were closely examined according to predefined criteria, ensuring a consistent and step-by-step approach to each text. This research process identified three groups of heterotopias based on predefined criteria and contexts. The conceptual differences between these groups of heterotopia definitions allow for a critical reading of public space, potentially applicable to a selected urban area. By facilitating the analysis of selected areas within set criteria, this method acts as a guide for evaluating public spaces.

Table 1 Elements | How They Inform the "View Lens"

Element	Description	Use in Developing the "View Lens"
Formation Styles	How the texts were written (e.g., academic research, critical analysis, cultural studies)	- Identifies the level of precision and theoretical grounding used to approach heterotopias. - Considers the intended audience and potential biases within different writing styles.
Methods of Handling Heterotopia	How each text approached the concept of heterotopia	- Analyzes how different texts define, analyze, and apply the concept of heterotopia. - Identifies strengths and weaknesses in different approaches.
Frequently Encountered Arguments	Shared ideas and perspectives found within the texts	- Highlights key recurring arguments about the nature, function, and significance of heterotopias. - Identifies areas of consensus and potential gaps in the existing literature.
Recurring Situations, Concepts, and Thoughts	Key themes and ideas that reappear across the texts	- Pinpoints central themes and recurring concepts associated with heterotopias. - Identifies key questions and debates surrounding the concept.
Intersecting Situations, Concepts, and Thoughts	Where different texts overlap or connect in their understanding of heterotopia	- Identifies areas of agreement and shared perspectives on heterotopias. - Helps build a more robust and comprehensive understanding of the concept.
Diverging Situations, Concepts, and Thoughts	Where different texts disagree or offer contrasting views on heterotopia	- Identifies areas of disagreement and competing interpretations. - Highlights the multifaceted nature of the concept and potential for further exploration.
Contribution to Architectural Knowledge	Texts provide new ideas and concepts that can be applied to architectural design and practice.	- Different text types provide architects with theoretical and practical knowledge that they can use to develop their design approaches and practices.

This approach is significant in understanding the layered nature of public space and how heterotopia unfolds these spatial dynamics. Thus, the study gains theoretical depth and offers a guiding framework for practical applications.

3.3.1. Selection of Texts

The selection process of texts is significant as they constitute a representative sample. This analysis concentrates on the past five decades following Michel Foucault's initial introduction of the concept in 1968 and its subsequent rise in architectural discourse with the 1984 publication of his work. Specifically, the study explores how the concept of heterotopia has been engaged in architectural theory from the 1980s, when it entered this field, to the present day.

Heterotopia goes beyond simply being a place of the other (Foucault, 2008), and complex social power dynamics shape it. Therefore, the reviewed literature encompasses texts that (i) evaluate heterotopias within the context of architecture and space: Which ensures a focus on how the concept applies to build environments and spatial design practices; (ii) analyze architectural relations with power from a spatial perspective: This shows how power dynamics are manifested and challenged within architectural configurations; (iii) texts that offer different perspectives on the concept of "the other," Including diverse understanding of how "otherness" is constructed and represented in heterotopic spaces.

This selection strategy is vital for understanding how the concept of heterotopia is used in architecture and spatial design. It also reveals how heterotopia functions within social, cultural, and political contexts. By examining a broad range of texts, we establish a deep theoretical foundation and new perspectives and critical frameworks for practical application in architectural design. This approach allows for a comprehensive and critical evaluation of how the concept of heterotopia is utilized and impacts the field of architecture.

3.3.2. Explanation of the Developed "View Lens"

Examining selected texts is a critical component of the methodological originality of this study. The text analysis process aims to apply an equal and consistent approach to each text. To achieve this, a framework has been developed to read all texts through the same lens, focusing on the concepts, approaches, and tools presented within them.

In heterotopia texts, how heterotopia is defined and in what context it is evaluated are primary factors for grouping the texts. The main factor for determining the context of heterotopia is the intricate nature of the relationship established with the 'other.' Initially, in heterotopia, it is determined who, which group, or what situation is defined as the 'other.' The nature of the relationship with the 'other,' whether it turns the 'other' into a feared or avoided myth, isolates itself by creating its own isolated world, or seeks ways to coexist with the 'other,' is considered. Another distinctive feature is the physical characteristics of heterotopias. Heterotopias have various qualities, such as being closed, having controlled entries and exits, being defined spaces, or being spaces whose physical boundaries cannot be read. They are defined through experiences, collectivity, or resistance states or as spaces that arise within the daily flow and disappear when their function ends.

Furthermore, the primary thoughts and secondary concepts used in defining heterotopias in texts also shape the context of heterotopia. Therefore, a detailed analysis of the references and key terms is necessary. Lastly, evaluating the place of defined or conceived heterotopias in architectural literature is also crucial (Table 2).

Table 2 Key Analytical Criteria for Heterotopia

Criteria	Description
1. Contextualization of Heterotopia	* **Defining the Other:** How the constructed heterotopia is defined and the context of its evaluation. The nature of the relationship with the "other" is the key factor. * **Forms of Otherness:** Analyzes how the "other" is portrayed: feared/avoided myth leading to exclusion or focus on co-existence through collective experience.
2. Physical Characteristics of Heterotopia	* **Spatial Typologies:** Categorizes heterotopias based on physical characteristics: closed/controlled spaces, spaces with illegible boundaries defined through experience/collectivity/resistance, or spaces emerging in the everyday flow and disappearing with function. * **Spatial Distinctions:** Focuses on the differences between these spatial typologies.
3. Theoretical Underpinnings	* **Concepts and Keywords:** Analyzes the references and keywords used to define heterotopia, as they influence its context.
4. Contribution to Architectural Discourse	* **Positioning within the Literature:** Evaluates the position of the defined/constructed heterotopia within architectural literature.

Consequently, a seven-step evaluation framework is created with each text approached through this framework. These steps serve as a tool for conceptualizing heterotopia.

The reasons for selection have been explained for each text, and its importance in the literature has been highlighted. Then, each text has been examined through the framework created with the following steps:

(1) The context in which the concept of heterotopia is used,

(2) The form of the relationship established with the 'other,'

(3) The identification of key terms and concepts and how these correspond to the overall position of the text,

(4) How the concept is exemplified (including singular or generic examples),

(5) The treatment of the concept over time in relation to other close ideas/texts/concepts and past references,

(6) References within the text,

(7) The contribution to architectural knowledge.

In conclusion, this framework categorizes heterotopias based on the outlined contexts (Table 3). This categorization, informed by theoretical and political discourses and conceptual differences, seeks to develop a new perspective on public space.

Table 3 Key Analytical Criteria for Heterotopia

	Step	Description	Focus
1	Contextualization of the heterotopia	Analyzes how the text defines and uses the concept of heterotopia.	Understanding the specific context of heterotopia within the text.
2	Nature of the relationship established with the "other."	Examines how the text portrays the "other" and the relationship between the heterotopia and the "other."	Is the "other" feared or a focus for co-existence?
3	Identification of prominent keywords and concepts and their alignment with the text's overall position.	Identifies key terms and ideas used alongside heterotopia and analyzes how they support the text's main argument.	How do these concepts reinforce the understanding of heterotopia in this text?
4	Examination of how the concept is exemplified (including singular or generic examples).	Analyzes how the text uses specific examples (real or hypothetical) to illustrate the concept of heterotopia.	How are these examples used to demonstrate the concept?
5	Interrelation with other related ideas/texts/concepts and the references cited in relation to the temporal approach to the concept.	Explores how the text connects heterotopia to other relevant ideas and how the concept has been treated over time through cited references.	How does this text contribute to the ongoing discussion of heterotopia?
6	References that are included in the text.	Analyzes the references used in the text to support the arguments about heterotopia.	What sources inform the text's understanding of heterotopia?
7	Contribution to architectural knowledge.	Evaluates how the text's exploration of heterotopia contributes to a deeper understanding of public spaces in architectural discourse.	Does the text offer new insights into designing public spaces?

Based on the steps above, a classification has been made according to the use of the concept of heterotopia in the texts, and three groups have been identified.

3.4. Texts

This section discusses how the study's findings can be used to evaluate public spaces. Each selected text (Figure 1) was treated as a case study, examined in detail, and analyzed through the "view lens." Initially, each text's content, thematic features, and theoretical approaches were examined. Next, the relationship of the texts with the concept of heterotopia and its representation

within the texts was explored. In the second stage, these analyses were systematically evaluated within the pre-determined seven-step evaluation framework (view lens). This assessment considered the texts' theoretical structure, methodological approach, conceptual consistency, connection with heterotopia, spatial and social interpretations, critical perspective, and overall contribution. This process offers a new methodology for understanding and evaluating applications of the heterotopia concept in architecture. It provides a critical lens for analyzing and designing public spaces that reflect the complexities of urban realities.

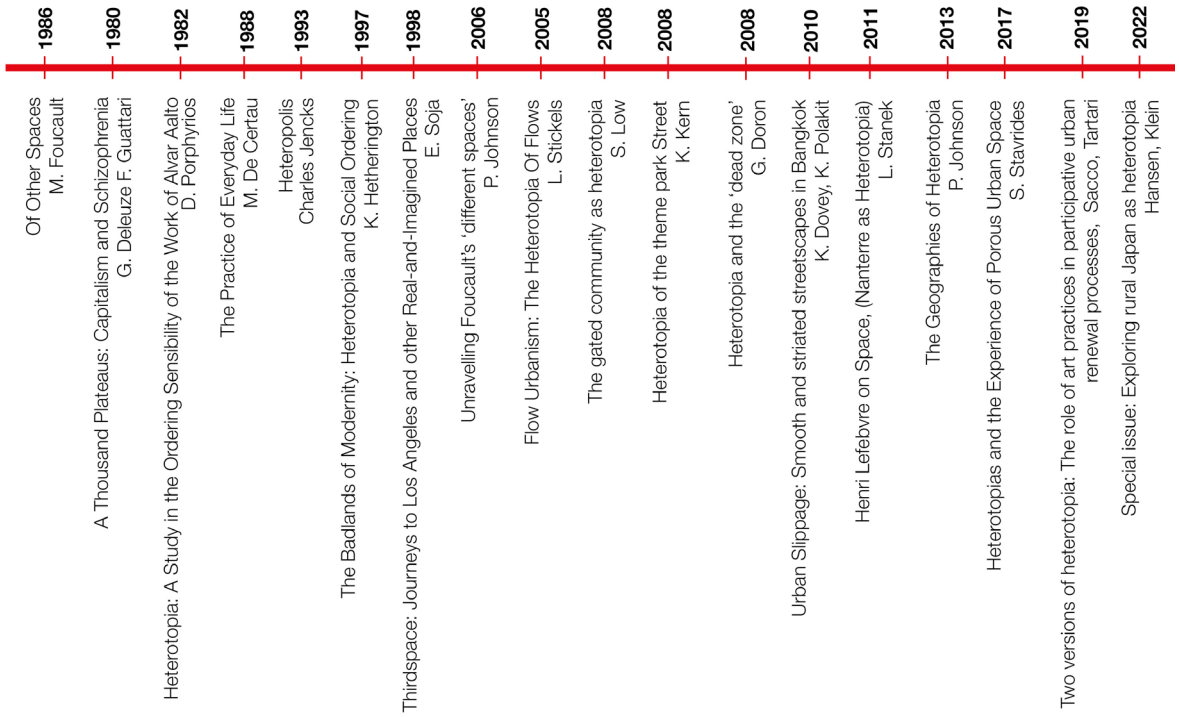

Figure 1 Chronological list of texts examined

3.5. Findings and Evaluation

This study examines the past five decades of architectural theory, focusing on how heterotopia has been analyzed and interpreted. The review begins with texts focused on heterotopia and extends to include texts emphasizing interstitial spaces such as third spaces, threshold spaces, and fluid spaces, all related to heterotopia. The primary objective of this study is to utilize the concept of heterotopia as a lens to provide a critical perspective on the use of public spaces. This analysis has revealed three distinct groups based on similarities and differences in the texts' fundamental characteristics. This categorization aims to introduce a critical framework for reading public spaces by the conceptual differences among the definitions of heterotopia within these groups. The way texts depict "the other" is the primary factor influencing how they are grouped based on their definitions of heterotopia. The exploration of "the other" by the questions of "who/what is attributed as the other" and "what position is taken against this other" helps to clarify the context of heterotopia. This analysis reveals an evolution in how "otherness" is treated, shifting from early texts on heterotopia to contemporary writings. This shift is likely influenced by the prevailing theoretical environment of each period. While early texts often dealt with inherent otherness arising from stark differences such as rich-poor, black-white, and heterosexual-gay, more recent texts have explored a broader scope, including human-nonhuman relationships. Haraway (2010) considers the "states of otherness as those emerging from the networks of multicultural, ethnic, racial, national, and sexual actors since World War II, who do not fit into the definitions of self or other offered by modern Western narratives, breaking away from the ready-made maps that define players and narrative types, focusing on a difference that is not based on discrimination, neither

modern nor postmodern, but to insist on the amodern, looking for a way to figure difference as a "critical difference within."

The influence of the Pandemic on changing spatial habits, along with interactions involving people, animals, objects, digital worlds, machines, organisms, and the rejection of "fixed identities and dialectical oppositions" (Braidotti, 2018), has led to a reinterpretation of heterotopias. As living and theoretical landscapes shift, the concept of heterotopia proves its adaptability by welcoming contemporary expansions.

Early heterotopia texts from Porphyrios (1982), Tafuri (1987), and Teyssot (1980) progress through type and typology. Heterotopia is read through Aalto's resistance to the universal principles of modernism, focusing on spatial organization, discontinuity in volumetric organization, and material combinations as design factors. The texts focusing on housing and leisure activities, such as "The Gated Community as Heterotopia" (Low, 2008), Kern's (2008) "The Village Park Royal," Muzzio & Muzzio's (2008) "A Kind of Instinct': The Cinematic Mall as Heterotopia" show how heterotopias are constructed through formal features. These texts collectively suggest that spatial connections serve as tools in the emergence of certain social processes, with the built environment acting as a catalyst for social and cultural change. The relationship with the other is defined by exclusion, leading to the designation of these heterotopias as "order heterotopias," closely aligned with Foucault's original definition.

In contrast, texts such as Stavrides's (2017) "Heterotopias and the Experience of Porous Urban Space," Allweil's (2008) examination of diversity on the beaches of Tel Aviv, and Lefebvre's "Nanterre as Heterotopia" (Stanek, 2011) focus on heterotopias as spaces of resistance. These discussions transcend the physical characteristics of space, emphasizing usage and interpretation. The concept aligns with Lefebvre's (1991) definition of heterotopia, where space is undefined and serves as a reflector of socio-economic or cultural processes. In this heterotopias, the characteristics of the space itself are not decisive. However, the impact of social and cultural mechanisms such as capital movements, labor relations, discriminatory practices, and symbolic transformations are emphasized. This group of heterotopias is identified as resistance heterotopias.

In the texts of "Hansen's (2022) Rural emplacements: linking heterotopia, one health and ikigai and G. Doron, a different situation emerges from the two groups described. The third group includes texts that construct heterotopia based on program, featuring temporary heterotopias formed by the flows of everyday life that disappear after their function's completion. This group is identified as "flow heterotopias."

Consequently, heterotopias are divided into three categories based on their definitions (Table 4): (i) Texts that construct heterotopia through form, typology, and spatial organization (Order); (ii) texts that construct heterotopia through spaces of resistance (Resistance); (iii) texts that construct heterotopia through program (Flow).

Table 4 List of Closely Examined Texts and their Categorizations

Category	Articles	Description
Order	* Heterotopias and the history of spaces, G. Teyssot (1980) * Heterotopia: A Study in the Ordering Sensibility of the Work of Alvar Aalto, D. Porphyrios, (1982) * The sphere and the labyrinth, M. Tafuri (1987)* Heterotopia of the theme park Street, K. Kern (2008) * 'A kind of instinct': the cinematic mall as heterotopia, D. Muzzıo, J. Muzzıo (2008) * The gated community as heterotopia, S. Low (2008) * Heterotopias of illusion: From Beaubourg to Bilbao and Beyond, D. G. Shane (2008) * Secure from All Intrusion": Heterotopia, Queer Space,	These heterotopias are defined by their physical characteristics and spatial organization, which create mechanisms for inclusion and exclusion. They often reflect or reinforce the dominant social order. * Theme parks, malls, and gated communities control access and regulate experiences. * Focus is on the built environment and how it shapes social processes. * Align closely with Foucault's original definition of heterotopia.

	and the Turn-of-the-Twentieth-Century American Resort, Kevin D. Murphy (2009)	
Resistance	* Henri Lefebvre on Space, (Nanterre as Heterotopia), L. Stanek (2011) * Heterotopias and the Experience of Porous Urban Space, S. Stavrides (2017) * Rural emplacements: linking heterotopia, one health and ikigai in central Hokkaido, P. Hansen (2022) * The young, the stupid, and the outsiders: urban migrants as heterotopic selves in post-growth Japan, S. Klien (2022)	These heterotopias challenge or subvert the established social order, often through usage and interpretation rather than physical form. * Public spaces used for protest disrupt the status quo. * Porous urban spaces create opportunities for unexpected interactions and defy rigid planning. * Rural communities, in some cases, can resist homogenization. * Align more with Lefebvre's definition of heterotopia, where space reflects socio-economic or cultural processes.
Flow	* Heterotopia and the 'dead zone' G. Doron (2008) * Flow Urbanism: The Heterotopia Of Flows, L. Stickels (2008) * Urban Slippage: Smooth and striated streetscapes in Bangkok, K. Dovey & K. Polakit (2010)	These heterotopias are characterized by movement, fluidity, and the breakdown of traditional boundaries. They are often temporary or programmatic. * Airports facilitate movement and encounters between diverse people. * "Dead zones" can represent a break from societal norms and structured spaces. * The concept of flow emphasizes the constant movement and exchange within these spaces.

Each group gathers texts with distinctive focuses: **the first group** emphasizes formal and typological features where heterotopias function through specific mechanisms of inclusion/exclusion, and interactions are regulated by the physical environment. **The second group** focuses on the usage and interpretation of space. **The third group** explores heterotopias as temporary constructs shaped by the programmatic aspects of space, where encounters with the other are highly valued. **The first group** (Figure 2) includes texts in which formal and typological features are prominent. Heterotopia operates according to specific spatial inclusion and exclusion mechanisms. In heterotopia, life is organized, practiced, and managed in relation to certain physical characteristics of the built environment. The focus is on the constraints and opportunities inherent in space itself rather than elements of use or interpretation. In these texts, spatial arrangements are instrumental in the emergence of certain social processes. The built environment has been a catalyst for social and cultural change. Buildings or designated places serve as mediators for organizing behavior, disciplining the body, or maintaining and controlling the presence of social interaction. The relationship with the "other" favors the dominant majority, restricting the movements or existence of minorities coded as "other." Texts in this group are the closest to Foucault's concept of heterotopia. For Foucault (2008), heterotopia is a real place that represents, contests or inverts something within the existing social order. It is a completed state, not describing a flow or concerned with an activeness or eventfulness constructed in the city.

Demetri Porphyrios, Manfredo Tafuri and Georges Teyssot
(Type-Typology Oriented Texts)

(1) the concept of heterotopia is used to describe the formal characteristics that define a building or space, to make sense of form and function, and to see how spatial organisation is reflected in social relations.
(2) The spatial, symbolic and social representation of the other and the questioning of this representation. The relationship established with the other is based on creating a specific community beyond inclusiveness.
(3) homotopic modernism (Aalto's attempt to break homotopic modernism through the organisation of space and material combinations), form, type, typology
(4) Institutional building types as complex spaces combining real and imaginary architectural elements, analysing spatial types through Alvar Aalto and Piranesi's drawings
(5) is seen in relation to the criticism of modernism
(6) Foucault, Piranesi
(7) criticising modern form and typology through heterotopia

The Gated Community as Heterotopia (Setha Low)
(Housing-orientated texts)

a safe haven, a fortress in a geography of fear, the fiction of a difference between insiders and outsiders, an inclusive exclusion, the illusion of creating a community.

(1) heterotopia is used in the context of creating a controlled space. "spaces that invite a particular community in and are created for that community"
(2) Relations are established with the other through segregation. It is aimed to exclude the other by creating a special community.
(3) social order, safe space, shelter
(4) housing is exemplified through closed spaces, leisure activities and the use of public space through shopping centres.
(5) Foucault's reference to "places where social order, technologies and discipline are dismantled or at least temporarily suspended and reorganised (school, military camp)" is used.
(6) Foucault
(7) Discusses Foucault's concept of heterotopia and its application to everyday life by creating specialised public spaces.

Figure 2 The application of the view lens in the first group texts, Order Heterotopias

In the second group (Figure 3) of texts, resistance spaces are created by the "other" against the order imposed by the dominant majority. This line of thought primarily draws from Lefebvre's definition of heterotopia. The space is relatively undefined and is seen as a reflection of socioeconomic or cultural processes. The characteristics of the space itself are not decisive, but the impact of capital movements, labor relations, discriminatory practices, symbolic transformations, and other social and cultural mechanisms are emphasized. Among the crucial elements of the transformation of urban space into spaces of resistance are the intermingling activities and the acts that enable individuals to express and represent themselves. As representational spaces, heterotopias are produced by a specific series of social relations and their spaces. According to Harvey (2013), "Lefebvre's concept of heterotopia, describing liminal social spaces, assigns fundamental importance to the definition of a revolutionary path beyond making 'something different' possible. This "something different" does not necessarily arise from a conscious plan; it arises from what people simply do, feel, sense and express as part of the search for meaning in their everyday lives. Such practices produce heterotopic spaces everywhere."

The young, the stupid, and the outsiders, : urban migrants as heterotopic selves in post-growth Japan", Susanne Klien

"an attempt to analyse difference through a single individual"
(1) resistance to local norms, a social order that deviates from traditional local ways but critically utilises them
(2) constructing heterotopia through migrants and their efforts to carve out a vital niche for themselves in rural areas that are considered disadvantaged in terms of their structural environment
(3) Heterotopic selves
(4) Ethnographic research
(5) The cases discussed show how resistance and subjugation can be equally prominent.
It connects with Lefebvre's comment that "Heterotopia is the other place, the place of the other, simultaneously excluded and interpenetrated".
(6) Lefebvrre, Hetherington, Tompkins
(7) argues that urban dwellers play ambiguous roles between uncertainty, desire, hope and precarity, and examines the strategies and measures individuals use in their efforts to create heterotopic selves in their chosen places of residence. In this way, a more nuanced approach to heterotopia as a relational space is aimed.

'Heterotopias and the Experience of Porous Urban Space', Stavros Stavrides

(1) The heterotopia of threshold urbanity is used in the context of the spatiality of a public culture composed of interdependent and related identities that are aware of each other. It is the collective experience of otherness.
(2) others are defined in terms of minority groups that are opposed to the majority and power. Ö
(3)social identity
(4) The social housing of Alexandras, where Turkish immigrants brought to Athens in 1922 as a matter of state policy were settled, is analysed. It is also exemplified by various spaces of occupation and resistance.
(5) Lefebvre argues that urban space emerges and changes as a result of the activities of people and institutions. Threshold urbanity is a space that emerges as a result of this process.
(6)Lefebvre, Foucault, W. Benjamin, R. Sennet
(7) heterotopia through the collective identity and processes of otherness

Rural emplacements: Linking Heterotopia, One Health and Ikigai in central Hokkaido, Paul Hansen

"non human"
(1)The state of intertwining physical and mental well-being of the place
any network of data or community of relations, including ideas about what constitutes healthy living, is also heterotopic, replicated depending on one's concerns.
(2) Human-transhuman, inclusive, positioned relative to each other, "interdependence between human and non-human beings in complex socio-ecological systems"
(3) safety, security and freedom, ikigai
(4) Ethnographic research
(5) heterotopic development questions an essentialist reading of any "body" (or indeed anyone: any individual), physical, social or political.
(6) Lefebvrre, Latour,
(7) Discussing how ikigai is experienced by those living in the region conceptualises and discusses how concerns for health and well-being provide rural residents with a motivation to stay in the region despite the negative connotations of rural life.

Figure 3 The application of the view lens in the second group texts, Resistance Heterotopias

In the third group of texts (Figure 4)**,** heterotopias are "social condensers" created by architectural programming and social gathering. These heterotopias are ephemeral, allowing for temporary departures from daily existence and facilitating moments of transition. Drawing on Stickels' (2008) concept, this group of texts can be understood as 'conceptual heterotopias of flows. In the heterotopias of flows, encounters with the "other" are precious, and these encounters are constructed through hybrid programs like terminal buildings.

Heterotopias are analyzed using three main concepts: mobility, density, and infrastructure. The concept of mobility is more than an architectural form or image that enables the flow of people to traffic links, airports, terminals, and train stations. It focuses on becoming a flow, manipulating the probability of events, and creating strategies for distributing individuals, goods, or information. The concept of density is related to hybrid architectural programs and gatherings. The concept of infrastructure is evaluated through "weak form," and the emphasis is on unfolding the architectural form as an infrastructure problem.

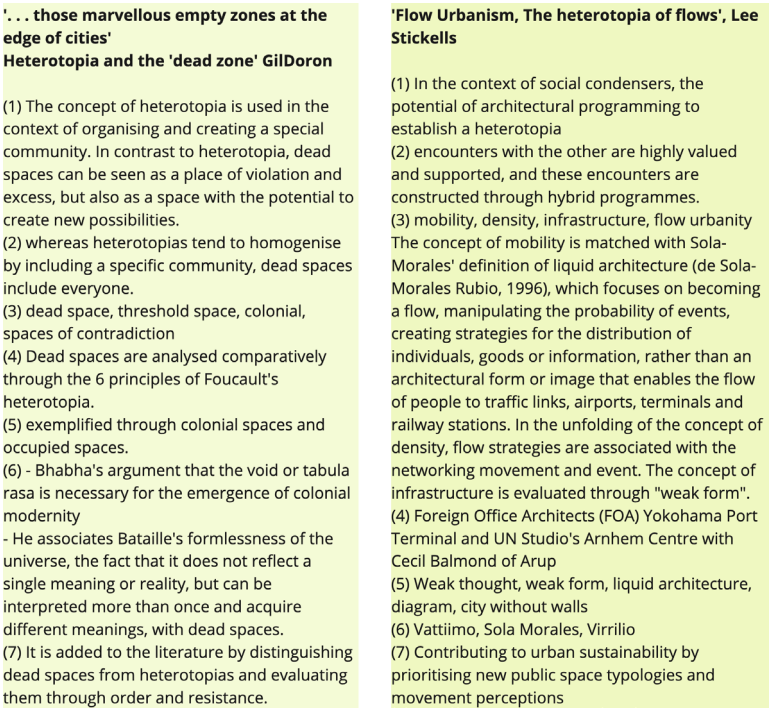

Figure 4 The application of the view lens in the third group texts, Flow Heterotopias

Foucault's heterotopias can be perceived as systems that maintain order by keeping other groups outside the general functioning of society. The 'deviant heterotopias' that Foucault listed, such as nursing homes, mental hospitals, and prisons, are seen as normalization tools that discipline the deviant bodies to prevent them from causing harm. In this context, the continuation of power relations is crucial. On the other hand, the 'illusion heterotopias' like cinemas, theaters, and brothels appear as places of desire that offer possibilities for destruction, heterogeneity, and transcendence, contrary to normalization. The literature positions texts according to two scenarios; some emphasize heterotopias as tools of normalization, while others view them as potential zones of resistance. The first group of texts, including gated communities, themed sites, shopping malls, and timeshares, close certain parts of the urban area for exclusive use, establishing discrimination against the cultural diversity in urban life. They also strengthen existing power relations by protecting the interests of high and middle-income groups without considering the potential negative effects on disenfranchised groups, serving only those who can afford it with a capitalist logic that turns shopping into social power. Residents of gated communities use gates to create their new community, disrupting other people's ability to experience "community." Thus, heterotopia excludes the rest of society from its private space, opening opportunities, and new experiences only for its residents. Entry into this heterotopia is bought with the price of a house. It

provides the benefits of a communal life while excluding others and separating its residents from the general worries of the world. In essence, the gated community contributes to a geography of social relations that generates fear and anxiety by placing one's home in a secure, gated, sheltered, and locked area, offering a safe haven for a few rather than an urban solution for many.

On the other hand, texts discussing heterotopias as spaces of resistance and freedom (Allweil, 2008; Doron, 2008; Stickels, 2008) focus on urban spaces that are not actively used, thus allowing alternative social conditions to emerge. These conditions include a wide range of 'informal' practices - Allweil describes gay cruising and drumming and dancing on the beach; Doron talks about parties, bonfires, fishing, sex, and graffiti art; Lang discusses temporary occupations and actions. For Stickells, the heterotopias of Flow Urbanism envision an alternative social order of public space based on the formal integration of the city's informal rhythm, activity, and human flow.

The first group of articles proposes a set of models/principles that could refine our ways of re-examining isolated areas, while the other two groups conceptualize the importance of the everyday's effect on public spaces framed by power. They suggest the possibility of reimagining cities through "other spaces" and evaluating them within the framework of "freedom." This supports urban publicness and has the potential to open new free spaces against the imposing power of authority. The creative character of the everyday opens up space in the constricted publicness. This process shows how heterotopias, as analytical tools, are adaptable for assessing public spaces, providing a means to reshape urban commonality against dominant power structures and maintain areas of freedom and creativity in urban life.

4. Conclusion

This study began as a journey of exploring the possibilities of coexistence with the "other" within public spaces. This exploration highlighted the emergence and significance of the "other" in the post-modern era, a period marked by the fragmentation of grand narratives and a shift towards acknowledging diversity, heterogeneity, and fragmentation. The concept of space was thus reimagined, leading to the development of theories on hybrid spaces, among which Michel Foucault's notion of heterotopia became central to this study. Foucault's work, along with subsequent scholarly contributions, laid the foundation for using heterotopia as an evaluation tool for understanding public spaces.

Through the selection and analysis of various texts, each considered as a case study, the research employed a carefully designed "viewing lens" to systematically examine these texts. The research has shown that heterotopia is not merely a theoretical construct but a pragmatic framework. This analysis resulted in categorizing the texts into three coherent groups based on their approach to heterotopias, each contributing distinct perspectives on the configuration of space. This categorization has been instrumental in critically examining and redefining public spaces, offering a nuanced assessment of public spaces.

The study's contribution to the architectural discourse lies in its introduction of an alternative urban reading method through the lens of heterotopia. This framework emphasizes the importance of creating public spaces that are inclusive, adaptable, culturally resilient, and responsive to the ever-evolving needs of contemporary urban life. By offering these insights, the study provides architects and urban planners with guidance on creating public spaces that meet societal needs and enhance community engagement and cultural expression. Furthermore, the research reveals the potential of heterotopia as a powerful tool for reimagining public spaces. By demonstrating how to design spaces that accommodate the complexity and richness of urban identities, this study contributes to the vibrancy and resilience of our urban environments.

This study, however, presents several opportunities for further research. By developing a "view lens" through a theoretical framework and text analyses, this study examined the issue of coexistence with the "other" in public spaces. The findings provide important insights into conceptualizing public spaces as heterotopic places and how the presence of the "other" is

experienced in these spaces. Future research will focus on how the "view lens" developed in this study can be used in urban contexts. A selected urban space will be read and evaluated through the "view lens."

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Note

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Plant selection for rain gardens in temperate climates: The case of Izmir, Turkey

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Abstract

Rain gardens have gained importance in recent years as a green infrastructure strategy. These gardens, created to capture, filter, and absorb runoff from impervious surfaces, offer a sustainable method for addressing water-related challenges in urban areas. Incorporating rain gardens into urban areas not only addresses the challenges of heavy rainfall and flooding but also brings about ecological advantages by encouraging biodiversity, improving water quality, increasing resilience, and enhancing the aesthetic appeal of urban settings. Plant selection in rain gardens plays a crucial role in their effectiveness and sustainability. The research focused on exploring the importance of carefully choosing plants for rain gardens, aiming to help in selecting the most suitable flora and creating visually appealing, resilient, and ecologically important landscapes. For this purpose, Izmir Katip Celebi University was selected as a study area. The first step was to locate an appropriate space for a rain garden and evaluate its potential for a rain garden implementation. Next, plants suitable for a rain garden in a temperate climate were listed. Among these plants, those that can be found in Izmir were selected after contacting nurseries. Only fourteen of them were available. Utilizing the plants listed that align with the project requirements and the plant design criteria such as diverse color, high density, and proportion outlined in the literature review, a proposal for a rain garden design was recommended. Since the rain garden consists of three different zones (dry, wet, and moderate), the plants were arranged accordingly. This design was tailored to suit existing conditions, such as a temperate climate and proximity to the building. Factors like varying climate conditions or alternative rain garden placements were not accounted for in this design. Given the necessity for diverse plant selections in varying climates, research carried out across different regions holds significant value. This study, conducted in Izmir province, will enrich existing literature and provide municipalities with crucial guidance in plant selection in a rain garden project, offering valuable insights.

Keywords: rain garden, plant selection, stormwater management, green infrastructure, urban resilience

1. Introduction

Cities have become more densely populated, and green spaces that naturally allow water to permeate have been replaced by an expanding number of impermeable surfaces. According to Antia (2008), urbanization typically results in an increased amount of stormwater runoff and low baseflow rates. These changes in hydrology are also influenced by variations in evapotranspiration, the negative effects of climate change, and the physical characteristics of drainage networks. As a result, the amount of surface water has grown to a point that conventional stormwater systems are unable to adequately treat it (Walsh et al., 2005). Moreover, due to climate change, rainfall has been more intense than in past years. This has led to urban flooding, and the consequences for society are significant (Gold et al., 2019).

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Recently, the term “resilience” has gained importance in urban planning. This refers to the capacity of urban environments to withstand and recover from various shocks and stresses, including natural disasters, climate change, social disruptions, and economic challenges. There are several theories and approaches have been developed to inform the concept. One of them is Ecological design theory. Ecological design principles advocate for creating built environments that mimic natural ecosystems and processes (Yang et al. 2004). By integrating elements such as green roofs, permeable surfaces, and natural systems, urban planners can enhance the resilience of cities and communities to environmental stressors. Another theory that has been discussed in the urban planning literature is Sustainable Development Theory. This emphasizes the importance of balancing economic, environmental, and social considerations to meet the needs of present and future generations (Shi et al. 2019). In the context of resilience, this theory promotes strategies that enhance the long-term viability and health of urban systems by minimizing resource depletion, reducing environmental degradation, and fostering social equity. These theories provide conceptual frameworks for urban planners to design and manage cities that are more resilient to natural disasters. By integrating principles of sustainability, complexity, collaboration etc., planners can help create cities that are better able to withstand and thrive in the face of uncertainty and change.

Based on this, green infrastructure has gained significant popularity in recent years as communities seek ways to mitigate the adverse effects of urbanization on local ecosystems and water quality (Davis, 2005). Green infrastructure strategies such as green roofs, rain gardens, and bioswales have emerged as innovative and sustainable solutions for managing stormwater runoff while simultaneously providing ecological and economic benefits. These multifunctional features not only prevent flooding and erosion but also contribute to improved water quality, support local biodiversity, enhance urban resilience, and increase the aesthetic appeal of outdoor spaces (Dietz, 2007). Among them, rain gardens as a green infrastructure strategy can also play a crucial role in reducing the impact of heavy rains and urban runoff by allowing rainwater to be absorbed naturally into the ground, promoting groundwater recharge, and filtering out pollutants (Yuan & Dunnett, 2018).

Rain gardens represent a paradigm shift in sustainable landscape design, offering an innovative solution to mitigate the adverse impacts of urbanization on natural water systems. Rain gardens, as a sustainable landscape design, can be implemented in different areas such as residential, commercial, or public (Steiner & Doom, 2012). These eco-friendly installations not only beautify urban environments but also play a crucial role in managing stormwater runoff, reducing flooding, improving water quality, and enhancing biodiversity. Rain gardens are mostly ideal for public spaces to display low-impact planting with a high aesthetic value that is appealing to city dwellers and also, significantly increase local biodiversity (Dunnett & Clayden, 2007). Based on these benefits, rain gardens have been one of the most generally utilized sustainable urban stormwater management systems and studies related to rain gardens have increased. Research on rain gardens has primarily concentrated on its design principles related to enhancing pollutant retention and the capacity of stormwater capture and the results have revealed that the effectiveness of a rain garden largely depends on the careful selection of plant species (Johnston, 2011; Dylewski et al., 2011). Although planting design is an important stage of the design of rain garden plants to maximize their effectiveness and beauty, it is frequently overlooked. Planting design is not only an important factor for stormwater management, but also crucial for providing aesthetic value to ensure easy adoption by the public. Most studies have pointed out that the public shows more willingness to the acceptance of an ecological design if it has high aesthetic value (Baptiste, 2014).

A significant problem with current urban green infrastructure and sustainable stormwater management systems such as rain gardens is the overall lack of care for plant diversity and aesthetics (Yuan et al, 2017). The selection of suitable plants for a rain garden is a vital aspect of creating a functional and aesthetically pleasing ecosystem that effectively manages stormwater runoff (Dunnett et al., 2008). Rain gardens are more than just functional; they are living systems

that can thrive when thoughtfully designed with the right plant species. The careful consideration of plant selection is key to ensuring the long-term success of a rain garden, as it directly impacts its ability to capture, filter, and infiltrate rainwater while enhancing the overall ecological value of the space. While studies have been focused on the design and substrate composition of rain gardens to increase its capture potential and pollutant retention, plant selection studies are not very common. Plant selection depends on some certain criteria such as the location of a rain garden, climate conditions etc. Since then, studies in different conditions and regions will be worth investigating. This study will investigate a rain garden application in temperate climate condition. In this study, we will explore the importance of plant selection for rain gardens and offer insights into choosing the right plants to maximize their effectiveness and create beautiful, resilient and environmentally beneficial landscapes in the context of City of Izmir. Finally, a rain garden design will be suggested.

2. Literature Review

2.1. Rain garden design

A rain garden is a carefully designed and environmentally friendly landscaping feature that serves multiple functions such as enhancing the beauty of outdoor spaces, managing stormwater runoff efficiently and increasing biodiversity (Bray et al., 2012). This innovative approach to sustainable landscaping has gained significant popularity in recent years as communities and individuals seek ways to mitigate the adverse effects of urbanization on local ecosystems and water quality. Rain gardens are not only aesthetically pleasing but also play a crucial role in reducing the impact of heavy rains and urban runoff by allowing rainwater to be absorbed naturally into the ground, promoting groundwater recharge, and filtering out pollutants (Dorst et al., 2019). Rain gardens are planted depressions that use flora and soils to reduce excess runoff from buildings, pavements, and roadways (Burge et al., 2012) (Figure 1). They are mostly used in the public right-of-way, along streets and roads and next to buildings (Steiner and Domm, 2012). The purpose of a rain garden is to temporarily collect and soak up rainfall from a driveway, roof, or sidewalks. The groundwater can rehydrate thanks to the precipitation collected, and part of the stormwater is retained by the plants. They can collect runoff from rooftops, sidewalks and streets. In the current study, the plant selection of a rain garden design, which are located near buildings, was investigated. This design will collect rainfall from downspouts.

Figure 1 An example of a rain garden design in Ankara, Turkey

Low, mid and high zones are the three primary parts of a rain garden (Figure 2). This part is the lowest part with high level of humidity (Luo et al., 2017). Plants that are water-resistant and able to tolerate sudden floods should be planted at low zone. This zone might also be called as ponding area. The reason is that when there has been rain, the low zone may have stood water. The mid zone is a sloping slope region with a moderate humidity percentage. This zone is semi-arid; thus, it is best to choose plants that can withstand the occasional presence of standing water or tolerate to periodic drought (Dunnet & Clayden, 2007). The high zone is the lowest moisture content of the layers. Since then, drought-resistant taxa should be chosen when planting in high zone. Moreover, when there is a big rainfall event and the rain garden is unable to contain all of the runoff, water is discharged into the overflow area (Luo et al., 2017).

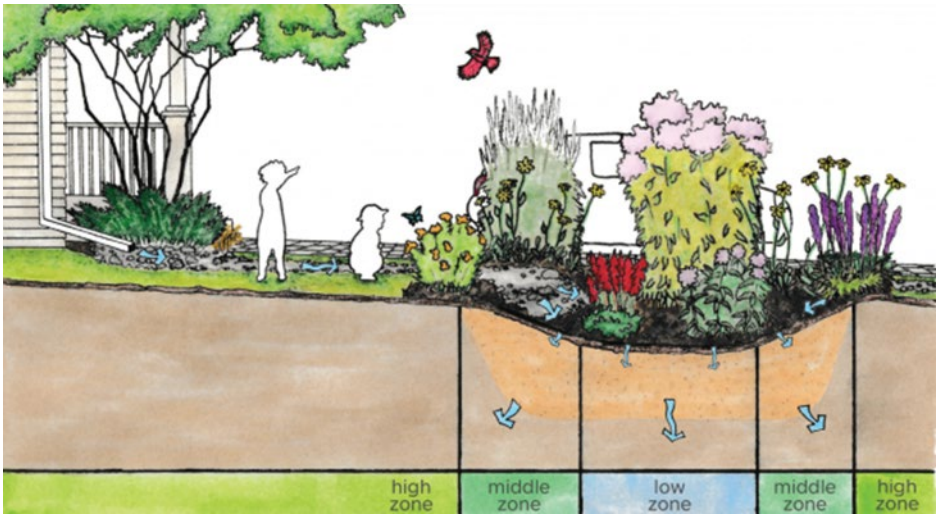

Figure 2 A rain garden section with three zones (CVC, 2022)

2.2. The importance of plant selection in rain garden design

Plant selection is a critical issue in rain garden design. When rain gardens are implemented, choosing the wrong species might lead to planting failure, which can have unpleasant visual impacts (Yuan et al, 2017). Moreover, there are studies that a rain garden's contribution to stormwater infiltration may be significantly reduced by the loss of vegetation (Yunusa & Newton, 2003). Therefore, even while the characteristics of the subsoil frequently have a significant impact in stormwater runoff treatment performance, the loss of vegetation as a consequence of failing to plant in a rain garden might result in a significant reduction in its contribution to stormwater infiltration. One of the main elements that contributes to the effectiveness of rain gardens is the health of the vegetation since it is essential to the supply of their ecosystem services. The ability of plants to withstand environmental stress under the unique conditions of rain gardens has a significant impact on the health of the vegetation there (Laukli et al., 2022). The key element influencing the ecosystem in rain gardens is moisture.

Making planting recommendations based on how plants respond to and adapt to rain garden moisture dynamics is crucial. The success of plants in rain gardens relies on the diversity of plant types used. This diversity impacts the long-term stability and visual appeal of the vegetation while also contributing to biodiversity conservation and minimizing stormwater runoff (Dunnett et al., 2008). It is advised to use flora with high plant variety in rain gardens, such as taxonomically varied wildflower meadows and grasslands (Dunnett & Clayden, 2007). The inadequate understanding leading to insufficient plant diversity and improper plant choices negatively impacts the success of rain gardens (Shaw & Schmidt, 2003). Although taxonomically diverse plantings are important in rain garden design, they have mostly been underestimated. The diversity in plantings can influence local biodiversity and ensure the enduring beauty and stability of plant communities. Enhancing the

variety of species in urban plantings could potentially optimize the ecosystem's ability to offer services, aligning with the concept that higher biodiversity supports the stability of community and ecosystem functions (Norton et al., 2016). Plantings that are taxonomically varied, such prairies and wildflower meadows, have more species richness than typical plantings. As mentioned earlier, incorporating these plantings in rain gardens offers multiple environmental advantages while also preserving the vegetation's role in managing stormwater. (Dunnett et al., 2008). Ordinarily, decorative grass, perennial flowers, and woody shrubs that thrive in both dry and wet situations are used to plant rain gardens. Perennial mixtures (especially blooming forbs and decorative grasses) are gaining popularity as alternative plant alternatives. Perennials, with their deep-rooted, long-lasting qualities, are ideal choices for rain garden planting. They enhance the ecological value of the garden and come in a wide range of colors, shapes, and sizes, making it easy to create visually stunning rain gardens, in addition to improving stormwater infiltration and evaporation (Hitchmough &Wagner, 2013).

Overall, the effectiveness of a rain garden largely depends on the careful selection of plant species suited to its unique conditions. Before starting the research related to plant selection, it's crucial to understand the role that plants play in rain gardens. These green infrastructure elements are designed to capture, filter, and absorb stormwater runoff from roofs, driveways, and other impermeable surfaces. Plants in rain gardens contribute to this process in several ways: infiltration, filtration, biodiversity and aesthetics. According to the findings of several studies, not all of the plants that are frequently suggested for inclusion in rain gardens performed well in testing, indicating the need for more area-specific rain garden plant study. Since then, studies in different regions are worth investigating.

2.3. Plant selection criteria

When selecting plants for a rain garden, it's essential to consider various factors to ensure their suitability and success. Criteria for plant selection that have been discussed in literature is shown in Figure 3. First, choosing plant species that are well-suited to current climate conditions, including temperature ranges, precipitation levels, and soil types is a very important criterion (Yuan & Dunnett, 2018). Native plants are often a great choice because they have evolved to thrive in specific local conditions. Moreover, native plants are often more resilient in the face of changing weather patterns and require less maintenance, making rain garden more cost-effective to maintain (Malaviya et al., 2019). In local plant selection, accessibility is also important, meaning that they should be available in existing nurseries. For instance, in this study, not all local plants were accessible because they were not available in nurseries. Secondly, the effectiveness of rain garden plantings depends on the variety of plants used. A diverse selection of plants with different root systems, sizes, and growth patterns can help increase the overall water-holding capacity of a rain garden. This, in turn, leads to better stormwater management as different plants absorb water at varying rates. (Dunnett et al., 2008). Different plant species also uptake various nutrients and pollutants from the water. A diverse selection of plants ensures a more comprehensive filtration and purification process, leading to cleaner water that recharges groundwater or enters local water bodies (Steiner & Doom, 2012). Moreover, wide variety of native plants in a rain garden creates a rich ecosystem and the seasonal variations in color, texture, and height because of plant diversity create a landscape that is aesthetically pleasing (Dunnett et al., 2008).

Next criterion is the selection of plants based on rain gardens' different moisture zones. Like mentioned, rain gardens consist of the rain garden consists of three different zones. Each zone has different humidity levels and, accordingly, different plant requirements. Making planting recommendations based on how plants respond to and adapt to rain garden moisture dynamics is crucial (For instance, for wet zones, water-tolerant plants should be selected because they can absorb excess water during heavy rains and gradually release it back into the soil, preventing flooding and erosion (Dylewski et al., 2011). Next, selecting low-maintenance species to reduce the effort needed to upkeep the rain garden is also important. In urban public places, poor maintenance can transform rain gardens into unpleasant look. Low maintenance plants require less water,

fertilizer, and pesticide use, promoting a more eco-friendly and sustainable approach (Yang et al., 2013). These plants reduce the amount of time and money spent on garden maintenance, making rain gardens more feasible for homeowners and communities with limited resources. Low maintenance plants tend to more resilient, contributing to the longevity and health of your rain garden (Dunnett & Clayden, 2007).

Finally, since rain gardens can be implemented at different areas such as along streets or roads, close proximity to buildings etc., each type of rain gardens are required unique planting design. For example, plants beside roads and streets must also be resistant to pollutants and splashes from the road (Shaw & Schmidt, 2003). Morever, rain gardens are required different needs in different regions such as cold climates, hot climates etc. More significantly, it is essential to be able to handle de-icing salt, which is frequently used in cold areas to maintain roads throughout the winter (Shaw & Schmidt, 2003). Since then, species for planting along roads in cold weather should be tolerant to salt.

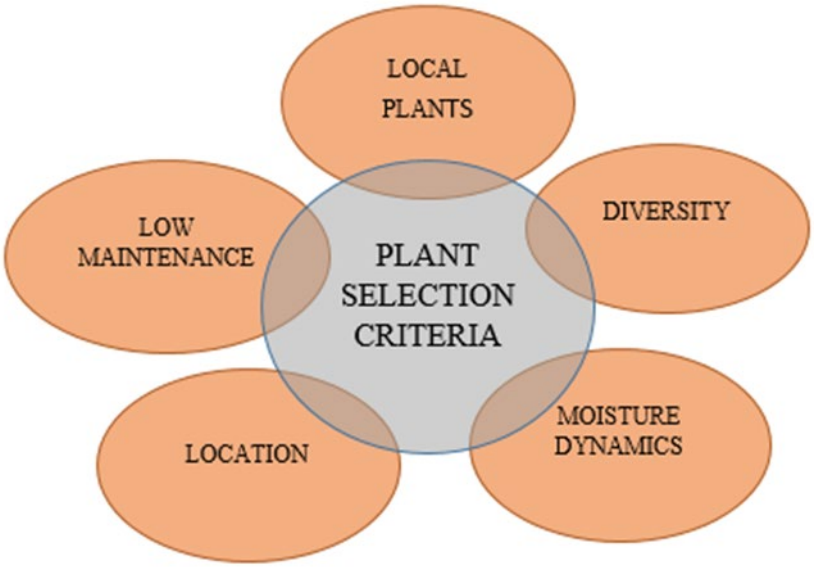

Figure 3 Plant selection criteria for rain garden design

2.4. Planting Design Criteria

Plants play a particularly important role in creating aesthetic and functional spaces, and they play an important role in softening hard surfaces and materials such as stones, walls and buildings used in landscaping. The physical attributes of plants—texture, form, size, and color—are what provide a landscape interest, diversity, and aesthetic appeal. According to Hannebaum (1998), plant design principles are form, texture, color, simplicity, variability, emphasis, balance and sequence. Ideas like color, texture, and size were also used to explore the principles of aesthetics. According to studies, these ideas affect people's choices for landscapes. When plants are used as compositions, certain design principles affect them. These principles play a role in many compositions. According to Hannebaum (1998), plant design principles can be listed as form, texture, color, simplicity, variability, emphasis, balance, sequence and scale.

Bell (2004) has stated that color is one of the most important landscape elements in visual perception. Human emotions may be revealed through different colors. Studies on ecological design have paid more attention to landscapes with different types of color selection (Harris et al., 2018). The most significant components of a landscape might be the colors of plants, texture, and shape to convey aesthetic impressions (Daniel, 2001). Color often draws the majority of people's attention when they first see a landscape. When evaluating and estimating the visual quality of a landscape, plant color has a big impact (Harris et al., 2018). Several authors have suggested that dense vegetation producing a complex landscape might be a more effective ecological process

(Bjerke et al., 2006). Its complex scene may also stimulate people's interest in its unexplored features, adding to its attraction (Kaplan, 1987). According to Bingqian et al (2020), proportion is also important in plant design. The size of the plants and their presence side by side in the compositions reveal their dimensionality in the designs.

Overall, there are many different physical attributes that increase the aesthetic value of planting design. Within the scope of the research, plant design principles such as color, density and proportion are discussed. Since rain garden design allow to use specific types of plants, the other design principles such as texture, form are not appropriate to discuss in the context of the current study. Since rain gardens have functional properties in addition to their aesthetic value, both of these criteria should be considered when designing them. Based on these identified principles, "density" planting design criteria is important when designing a rain garden. Firstly, a densely planted rain garden can be visually appealing, creating a vibrant landscape. (Hartman & Robison, 2017). Moreover, a dense planting ensures that rain gardens effectively capture and absorb stormwater runoff. The roots of plants help to improve its infiltration capacity and allowing water to drain more readily into the ground. A higher density of plants means more roots, which act as natural filters, trapping sediment and pollutants as water passes through the soil (Hartman & Robison, 2017). In summary, density plant design plays a crucial role in the effectiveness and functionality of rain gardens. By ensuring a high density of plants, designers can enhance stormwater management, prevent erosion, improve water quality, support biodiversity and enhance aesthetics.

Another design principle is "proportion". Properly proportioned plantings enhance the visual impact of the rain garden, creating focal points, contrasts, and spatial depth (Franti & Rodie, 2007). Moreover, consideration of plant proportions can influence maintenance requirements for the rain garden. Balancing fast-growing and slow-growing plants, as well as deciduous and evergreen species, can help maintain a consistent appearance and minimize the need for frequent pruning or replanting. The proportion of plants also affects the rain garden's ability to manage stormwater effectively. A balanced mix of plants with different root depths and growth habits helps maximize water absorption and infiltration, enhancing the garden's ability to mitigate flooding and reduce runoff. In summary, the proportion of plants is an important aspect of rain garden design that influences both its aesthetic appeal and functional performance.

"Color" criterion is also one of the important factors while designing rain garden. The colors of plants contribute significantly to the overall visual appeal of the rain garden. Incorporating plants with varying colors ensures that the rain garden remains visually interesting throughout the year. Moreover, certain flower colors are more attractive to pollinators such as bees, butterflies, and hummingbirds and this can attract pollinator to the rain garden, promoting biodiversity and ecosystem health. By carefully selecting plants with a variety of colors and arranging them thoughtfully within the garden, designers can create visually appealing and ecologically functional landscapes that enhance the overall quality of the environment. Finally, a rain garden design will be suggested based on plant selection and plant design criteria.

3. Methodology

3.1. Research design

The steps in the research design are illustrated in Figure 4. These steps include area selection, plant selection and design of a rain garden. The first step was to identify a suitable area for a rain garden and assess its suitability for creating a rain garden based on its current condition. The next step was to find suitable plants for the rain garden in temperate climate, establish criteria for plant selection, and list the plants that meet the criteria for the selected area. Finally, a rain garden design that met all the criteria was suggested. These stages are three important components of the current study.

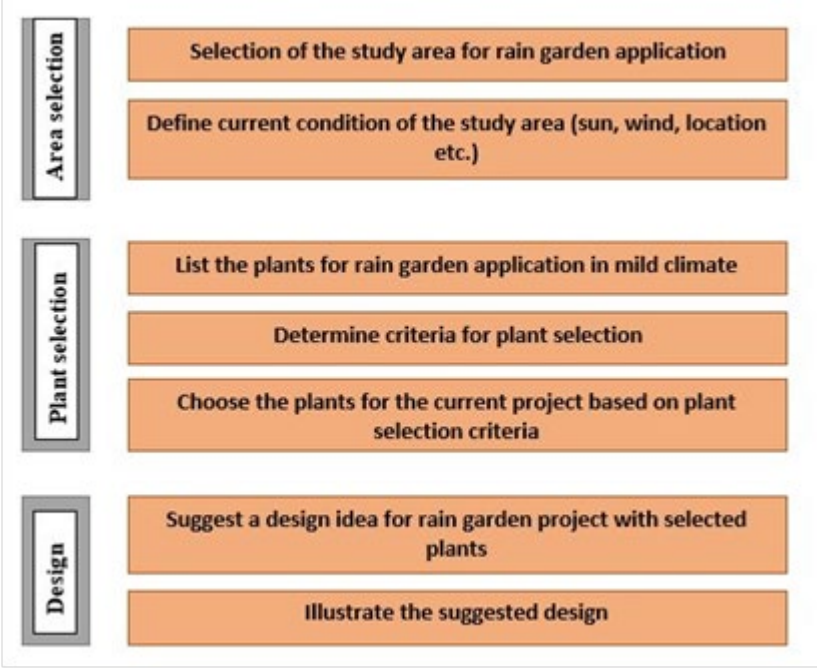

Figure 4 Research design

3.2. Study area

The Sponge City Izmir initiative, introduced by the Izmir Metropolitan Municipality, seeks to mitigate flooding through the collection of rainwater. Since the importance of public participation has been realized in the context of Sponge City, as part of the upcoming second project, approximately 10,000 citizens will be provided with the necessary plants to create rain gardens as part of their implementation. For this study, İzmir Kâtip Çelebi University was selected as study area. The implementation of a rain garden will be carried out on the campus within the scope of an ongoing project. This project to be undertaken on the campus could contribute as an example to the ongoing work led by Izmir Metropolitan Municipality.

After performing site assessments at different places on the IKCU campus, the research site was decided upon as being an inside space close to the Science and Engineering Building (Figure 5). Three key considerations served as the foundation for choosing this location. First and foremost, the area's slope and soil composition were significant physical characteristics that may have an influence on how well a rain garden was implemented. The research site's appropriateness for a rain garden was established by an in-depth soil investigation and slope assessment. Second, the choice of the research site was significantly influenced by an area's physical and visual accessibility. In order to guarantee easy access and aesthetic integration with the next building, the study site that was chosen underwent a thorough evaluation. When choosing the research location for a rain garden, microclimate conditions were still another important consideration. While some of the plants meant for gardens need full sunlight, others thrive in partial shade. The predominant breeze on campus has the potential to readily impact several plants.

Figure 5 The selected area for rain garden design

Izmir's climate is defined as temperate and moderate climate. In comparison to the summer, Izmir receives more precipitation during the winter season. Izmir has average annual temperatures of 17.1 °C (62.7 °F) and rainfall totals 742 mm (29.2 inches) each year (Figure 6). Since Izmir has a moderate climate condition, plants that are suitable for this climate were selected for rain garden design. The area for the rain garden was determined by calculating the roof area where water would collect. By estimating the average rainfall and surface runoff, it was calculated that an approximate area of 75 square meters would be needed for the rain garden.

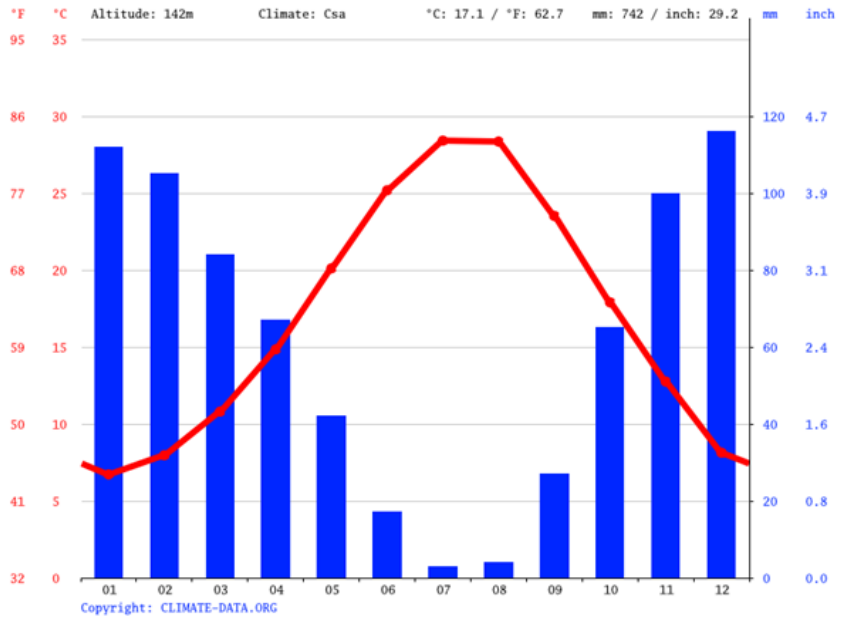

Figure 6 Climate condition in Izmir (tr.climate-data.org)

3.3. Plant selection

Plant selection for the project was made according to the criteria mentioned above: climate conditions, location of the rain garden, different moisture zones, plant diversity, and plants required low maintenance. Plants which are suitable for temperate climate conditions were listed below after a detailed investigation (Table 1). Moreover, they are categorized as their light and moisture range. These plants are the most preferred rain garden plants in temperate climate conditions (O'Farrell, 2021; Yuan, 2016). Yuan (2016)'s study give the detailed information about rain garden plants and share the plant lists based on different conditions such as sunlight requirements (Steiner & Domm, 2012), moisture tolerance (Woelfle-Erskine & Uncapher, 2012) etc. Table 1 was created after examining suggested plant lists. Since this project will be implemented next to a building and collecting water from roofs, the requirements such tolerant to salt, vehicle emissions etc. for the implementation for rain gardens along roads or streets were not taken into consideration.

Table 1 List of plants in temperate climate condition for rain garden

		Light Range			Moisture Range			
Scientific name	Common name	Full Sun	Partial Sun/Shade	Full Shade	Dry	Moderate	Wet	Current Design
Acorus gramineus	Sweetflag	X	X	X	X	X	X	
Andropogon gerardii	Big bluestem	X	X		X	X		
Aronia arbıtifolia	Red Chokeberry	X	X			X		
Asclepias tuberosa	Butterfly milkweed	X			X	X		
Aster laevis	Smooth Aster	X	X			X		X
Athyrium filix-femina	Lady Fern			X			X	
Cistus creticus	Cretan Rockrose	X	X		X	X		X
Cercis occidentalis	Western Redbud	X	X		X	X		X
Cyperus papyrus	Paper Plant	X	X				X	X
Cornus 'Midwinter Fire'	Bloodtwig	X	X			X	X	X
Cortaderia Selloana	Pampas grass	X	X		X	X		X
Cyperus longus	Merebook ponf plants	X	X	X			X	
Juncus acutus	Spiny rush	X				X	X	
Juncus effusus	Soft Rush	X	X		X	X		X
Heuchera Americana	Alumroot		X	X		X	X	
Ilex verticillata	Winterberry	X	X				X	X
Iris douglasiana	Douglas Iris	X	X		X	X		
Lobelia cardinalis	Cardinal flower			X		X	X	
Osmunda cinnamomea	Cinnamon Fern	X	X			X	X	
Pennisetum alopecuroides	Fountain grass	X	X		X	X		X
Phlox divaricata	Woodland Phlox		X	X		X	X	
Physocarpus capitatus	Pacific ninebark	X	X			X	X	
Ribes sanguineum	Red-flowering currant	X	X			X		

Ruscus aculeatus	Butcher's broom		X	X	X			X
Sambucus canadensis	Elderberry	X	X		X	X		
Lavandula angustifolia	English Lavender	X	X		X	X		X
Lythum salicaria	Purple Loosetrife	X	X			X	X	
Miscanthus sinensis	Japanese silver grass	X	X			X	X	
Typha Latifolia	Broadleaf Cattail	X	X				X	X
Vaccinium ovatum	Evergreen huckleberry	X	X	X		X	X	
Vitex angus-castus	Chaste Tree	X	X			X		X

4. Results and Discussion

In the current study, plants were selected based on rain garden plant selection criteria. There are many different plants which can be used in a rain garden design but since this rain garden design will be implemented in a temperate climate condition, plants are listed in this climate condition. The next step was to check if the listed plants can be found in the city of Izmir. The rain garden design will be implemented in İzmir Kâtip Çelebi University Cigli Campus. Based on this, nurseries which is close to 15 mil away from the district of Cigli were reached out via phone or email to reduce the transportation cost. Only nurseries which belong to government or Ministry of Forestry were called and the private nurseries were elimanted since the project only have a limited budget to purschase plants. There was only one nursery in Karsiyaka belong to Ministry of Forestry and four nurseries belong to municipalities in Karsiyaka, Cigli, Bornova, Karabaglar, Guzelbahce. Based on this, the plants which can be available were marked in Table 1. Only fourteen of them were available in the context of this study. The detailed information with these selected plants were shared in the below (Table 2).

Table 2 Selected plants for rain garden project

Plant name	Type	Color	Maintenance	Height	Area	Season of Interest
Zone 1						
Cortaderia selloana	Ornamental Grasses		Low	180 cm-3 m	180-240 cm	Summer(Late) Fall Winter
Juncus effusus	Ornamental Grasses, Perennials		Low	60-120 cm	60-120 cm	Spring Summer Fall Winter
Pennisetum alopecuroides	Ornamental Grasses		Low	90-120 cm	90-120 cm	Spring(Mid, Late) Summer(Early, Mid, Late) Fall
Ruscus aculeatus	Evergreen Shrub	Red (fruit)	Low	40-75 cm	50-100 cm	Spring Winter
Zone 2						
Aster laevis	Perennials	Purple	Low	60-120 cm	30-60 cm	Summer (Late) Fall
Cistus creticus	Shrubs	Pink	Low	60-150 cm	60-90 cm	Spring (Late) Summer
Cercis occidentalis	Shrubs	Pink	Low	3-4.6 m	3-4.6 m	Winter (Late) Spring
Lavandula angustifolia	Shrubs	Purple	Average	60-90 cm	80-90 cm	Spring (Late) Summer (Early, Mid)

Vitex angus- castus	Shrubs	Purple	Low	120 cm-4.6 m	120 cm-3.7 m	Summer (Mid, Late)
Zone 3						
Cyperus papyrus	Perennials		Low	150cm-3.7 m	60-150 cm	
Cornus 'Midwinter Fire'	Shrubs	Red	Low	150-180 cm	150-180 cm	Spring (Late)
Ilex verticillata	Shrubs	Red (fruit)	Low	180 cm-3 m	180cm-3 m	Spring(Early, Late) Summer Fall Winter
Typha latifolia	Perennials		Average	90-210 cm	30-60 cm	Spring Summer Fall Winter

Based on the listed plants which are suitable for the current project and plant design criteria discussed in literature review, a rain garden design was suggested (Figure 3). This design includes nine plants from the list. For zone 1(dry zone), *Cortaderia selloana, Juncus effusus and Pennisetum alopecuroides* were selected. These plants are drought-tolerance since the zone 1 is the lowest moisture layer. For zone 2 (moderate zone), *Lavandula angustofolia, Aster laevis and Cistus cretius* were selected. This zone was suitable for plants that can endure intermittent periods of standing water or are resilient to occosional drought. For zone 3 (wet zone), *Ilex verticillata, Cornus 'Midwinter Fire'* and *Typha latifolia* were selected. These plants are water-resistant and capable of withstanding sudden floods. One of the most crucial criteria in rain garden selection, which is the selection of plants based on different zones, has been met. Moreover, these plants are suitable for the selected areas as they are tolerant to partial sun or shade. Another criterion for plant selection, which is low maintenance, has also been fulfilled. Choosing low-maintenance plants reduces the necessity for extensive attention and resources. Native plants, once rooted, usually demand less watering, fertilizing, and pest management, presenting cost-efficient and environmentally friendly options for rain gardens. Only *Lavandula angustifolia* and *Typha latifolia* are needed average maintenance compare to other plants in the list.

Choosing plant species that are well-suited to current climate conditions was also discussed as an important factor in rain garden plant selection. Choosing plants that are native or well-suited to the environment not only helps rain gardens handle water efficiently but also nurtures local ecosystems, enriches biodiversity, and adds to the aesthetic appeal of the area. Their resilience and adaptability to diverse conditions establish them as crucial elements of sustainable and flourishing urban settings. For this purpose, plants which were suitable for Izmir weather conditions were selected and their availability was confirmed by contacting local nurseries in Izmir. Only available plants were chosen and included in the current design. Finally, since the efficiency of rain garden relies on the variety of plants utilized, it is important to choose a diverse selection of plants. Considering this criterion, plants of varying sizes and different root systems were selected to aim for an increased water retention capacity in the rain garden.

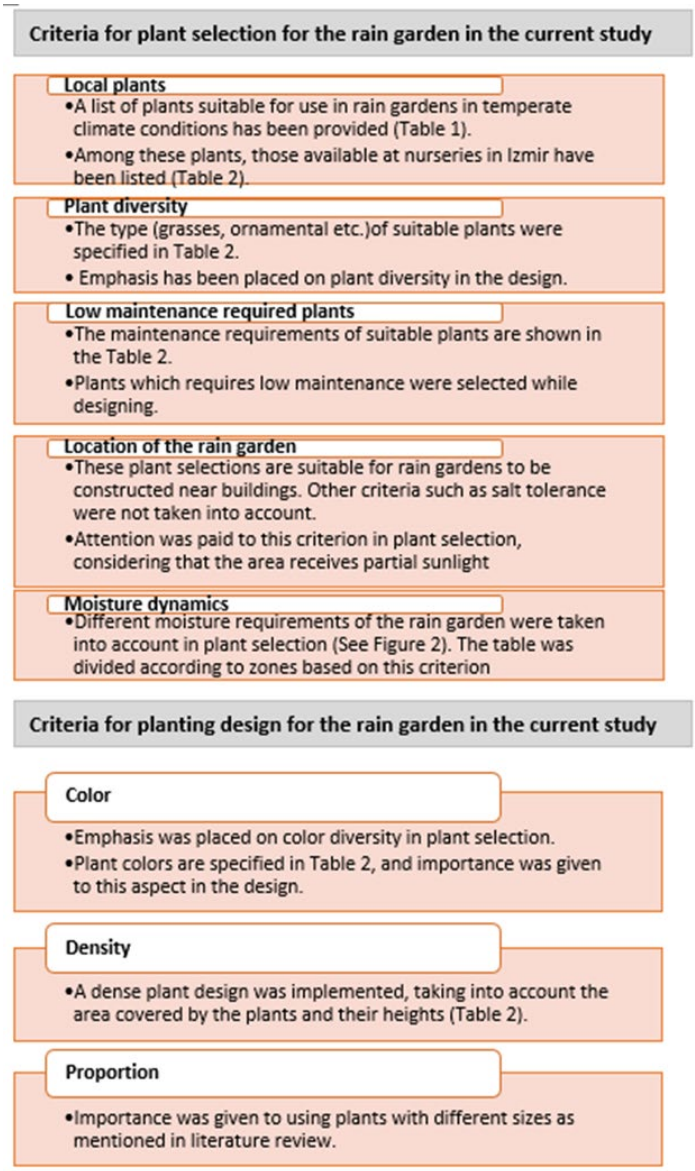

Figure 7 Summary of the criteria considered in the rain garden design in the current study

After all the plant selection criteria was met, plants were designed based on plant design criteria discussed in the literature (Figure 7). Since different types of color selection has been gained more attention in ecological design, plants with diverse color palettes were selected such as *Lavandula angustifolia, Ilex verticillata, Cistus creticus* etc. By including plants that bloom at different times and possess diverse colors, the rain garden maintains its attractiveness in every season. Moreover, high-density planting design was discussed as an important factor to attract people's attention. Accordingly, while designing the rain garden, plants of varying heights and spacing were selected to create a sense of density such as *Ilex verticillata, Juncus effusus, Typha latifolia* etc. Proportion is a significant factor in plant design as well. Since then, when designing, attention was paid to ensuring that the plants harmonize proportionally in terms of their sizes. Additionally, choosing perennial plants such as *Aster laevis, Juncus effusus* and *Cyprus papyrus* with long lifespans reduces the need for frequent replanting, contributing to the garden's sustainability.

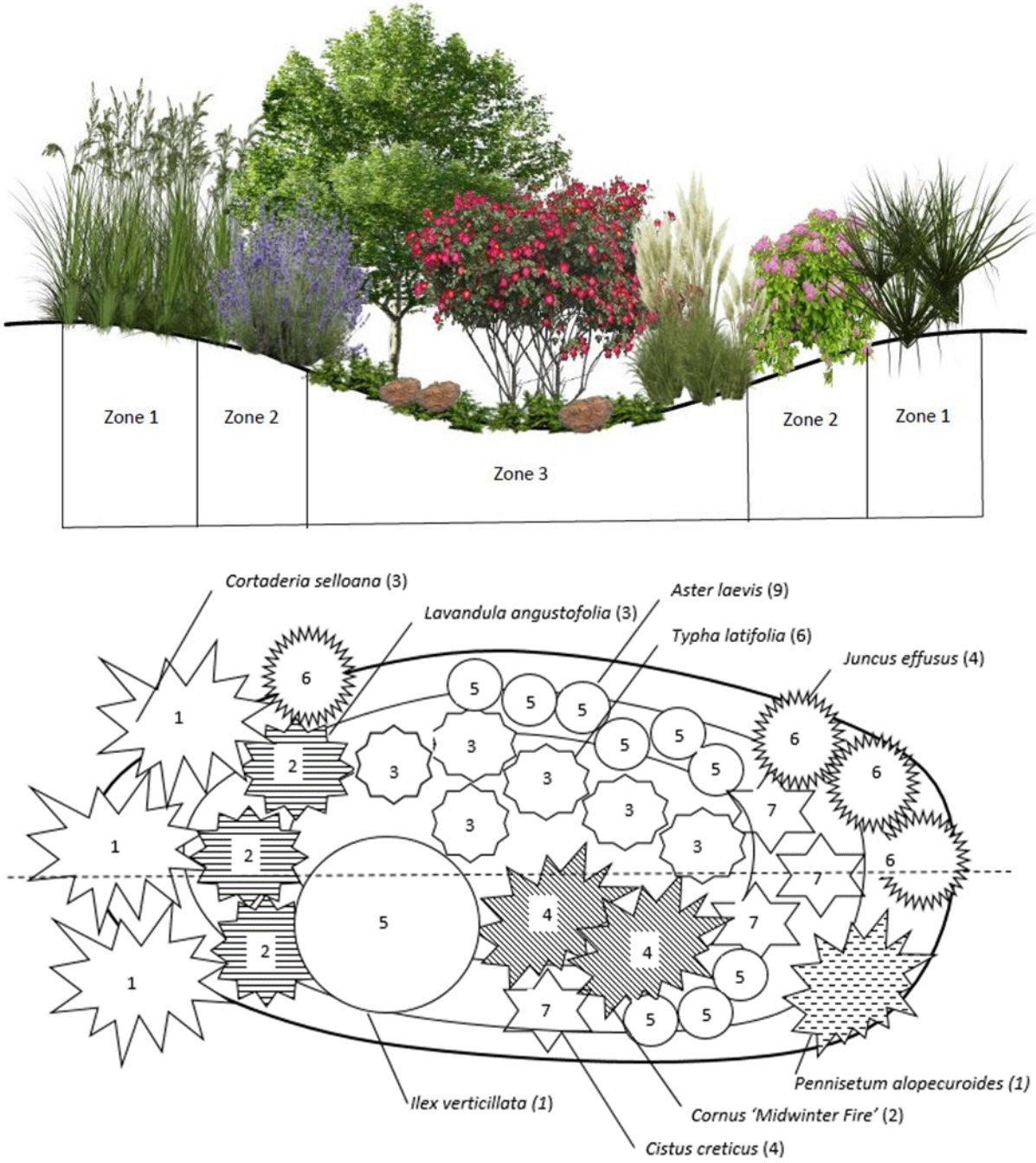

Figure 8 Suggested rain garden design

Taking all these criteria into account, the rain garden design was developed (Figure 8). In other words, it was designed to meet both the plant selection criteria and the plant design criteria. The numbers and names of the plants are indicated on the image. This rain garden will be built next to the building to collect water from the roof. As seen in the image, emphasis was placed on color diversity, proportion, and density in the design. This design has been created to fit current conditions such as temperate climate and being constructed next to the building. Other criteria, such as different climate conditions or alternative rain garden locations, have not been taken into consideration.

5. Conclusion

Rain gardens provide a balance between nature and urban infrastructure, offering multifaceted benefits that increase urban resilience. Plant selection is a crucial step in the creation of a successful rain garden. Plants serve as the key element of the rain gardens' functionality and also, provide ecological and aesthetical value. Choosing the right plant species is essential for rain gardens as it directly impacts their appearance and effectiveness in functioning properly. Careful consideration of plant species based on their ability to thrive in varying moisture conditions, root structures, sizes, and maintenance requirements directly influences the garden's efficiency in water retention, filtration, and supporting biodiversity. The right plant selection contributes not only to the garden's visual value but also to its resilience, fostering a sustainable ecosystem and enhancing its capacity to mitigate stormwater runoff.

Because different plant selections are required in different climate conditions, studies conducted in various regions will be valuable. This study conducted in Izmir province will contribute to the literature and serve as a guiding resource for municipalities in plant selection, offering valuable insights. This study proposes species distribution in various zones of rain gardens implemented next to a building in temperate climates as its primary result. Nevertheless, additional research is necessary to confirm these recommendations. The adequacy of the plants chosen in this study for integration into rain gardens next to buildings cannot be completely determined until their reactions are assessed after implementation. Moreover, exploring the behavior of these species in rain gardens located in diverse regions with varying temperate climates would be beneficial. Additionally, investigating the impact of planting time could provide valuable insights. Springtime planting might enhance initial plant survival rates by allowing enough time for the development of a strong root system before facing autumn floods. Yet, considering that flooding might occur in the summer as well, the best timing for planting in rain gardens could rely on the specific climatic conditions during the establishment year. Further research might evaluate the effectiveness of this suggested rain garden after its implementation and provide a detailed investigation into how the plants evolve over time.

In conclusion, the importance of choosing the right plants for rain gardens cannot be emphasized enough. These thoughtfully selected plants are the main components of an efficient ecosystem that can handle stormwater runoff while fostering biodiversity and ecological balance. Their capacity to adjust to local environments, increase water absorption, nurture wildlife, and require minimal maintenance makes them vital elements of sustainable and resilience urban environments.

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Resume

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Reflective thinking and self-assessment: A model for the architectural design studio

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Abstract

Developing, experimenting, and sharing critical pedagogical approaches is becoming increasingly important in architectural education, which supposedly superposes theory and practice. In this article, the authors reveal and reflect on an enriching pedagogical approach to the traditional architectural design studio. It is acknowledged that students develop comprehensive examination and internalization abilities by developing reflective thinking and self-evaluation abilities that complement each other. Based on the pioneer educational theory of John Dewey, the researchers' selected instructional interventions. Using the action research method, four additional modes conceptualized towards disciplinary literacy -reading, mapping, discussion, and peer assessment- were injected into the traditional studio process during a semester of architectural design course. The pedagogical approach is built on questioning the two basic creativity-based abilities of learners: reflective thinking and self-assessment. The fundamental questions are: How can a reading-discussion setup designed to nurture disciplinary literacy in the design studio be a factor in developing reflective thinking ability? How can the systematic peer assessment exercise be a factor in the students' self-assessment and reflective thinking skills as a learning outcome? The results argue for the effects on students' intangible skills. The model studio setup exhibited two remarkable findings, showing that (i) the reading-discussion mode is more effective in generating reflective thinking and (ii) the systematic peer review exercise is more effective in gaining self-assessment ability. The aim is to contribute to the theory of education by making the model application in the field of architectural design studio accessible and reflective for other educators.

Keywords: architectural education, disciplinary literacy, peer assessment, reflective thinking, self-assessment, studio-based pedagogy

1. Introduction

Developing, experimenting, and sharing critical pedagogical approaches is becoming increasingly important in architectural education, which supposedly superposes theory and practice. Architectural theorist Vidler (2000) states that the programs that diversify and enrich this tendency in architectural education guide raising curious and productive individuals. In this context, the literature (Dutton, 1991; Nicol & Pilling, 2000; Findeli, 2001) underlines the importance of applying research, development, and expertise, as well as technical skills in design studio pedagogy. The recent report on Turkish Architectural Education Policy published by the Union of Chambers of Turkish Engineers and Architects (TMMOB) in 2020 underlined the importance of developing critical thinking and regular monitoring, discussing, and evaluating the relationships of becoming a multi-wayed thinker in relevant vocational education. Comprehensive handling of projects to foster design thinking and their internalization by the student was identified as problems in the design studio environment. In this context, this work suggests some strategies for the development of critical thinking in line with constructive education approach, due to the aforementioned pivotal

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issue of regular monitoring, discussing, and evaluating in design studio pedagogy. This work investigates these wide issues partially; in a search for stimulating complementing reflective thinking and self-assessment abilities in architecture students. The strategies were tracked during the active research and their effectiveness is evaluated at the end.

Based on the pioneer educational theory of John Dewey, the researchers' selected instructional interventions, entitled as “additional modes” -reading, mapping, discussion, and peer assessment- exercises are planned and inserted in the traditional design studio setup. This case is addressed here as the “model studio” that allowed tools for disciplinary literacy and reflective thinking. The term disciplinary literacy describes “the use of reading, reasoning, investigating, speaking, and writing required to learn and form complex content knowledge appropriate to a particular discipline” (McConachie & Petrosky, 2009, p. 16). Thus, the model studio specifies disciplinary literacy as the medium for judgment to transition into purpose. In other words, it is constructing knowledge for design thinking, informing the design process. This work aims to evaluate the effects of the additional modes on students' reflective thinking and self-assessment abilities. The research questions are as follows:

How can a reading-discussion setup designed to nurture disciplinary literacy in the design studio be a factor in developing reflective thinking ability?

How can the systematic peer assessment exercise be a factor in the students' self-assessment and reflective thinking skills as a learning outcome?

2. The Traditional Architectural Design Studio and the Context for Developing the Model Studio

From the 17th century to the present day, the definition of the architect has been as an actor combining four specializations – academician, craftsman, engineer, and social scientist. The first formal school of architecture, the French School of Fine Arts (l'Ecole des Beaux-Arts) handled architecture as a fine art and the teachers were well-educated academicians. There wasn't much designing involved because mastering the desirable formal composition and beauty have been the most important outcomes. The next two specializations place less emphasis on form; craftsmanship comes from craft and folklore traditions, while engineers come from technology and applied mathematics backgrounds. The Polytechnic School (l'Ecole Polytechnique) founded in 1794 to train builders and engineers for the construction of military structures, ships, and industrial structures, formed the characteristics of the German Bauhaus and the Russian Vkhutemas in the early 20th century, and the technical school movements that spread rapidly in Europe and many developing countries throughout the middle of the century. The master teachers in these models are seen as professors who have the best design principles and styles. The difference compared to the first model solely being academics is that these studio masters were also practitioners. Professional competence is a skill that can only be achieved by working under these professors (Salama, 2015). Although the first three models appear different, they share a feature in meeting society's needs. All focused on the formal or technological aspects of architecture and created with little or no concern for social and cultural issues (Salama, 2007).

The general profile of the 20th century architect was as one who designs everything about a project and has the power to make all decisions. The architect of the 21st century is in the discovery of any need, she/he tends to bring together the components made possible by nature, sector, technology, and economy in the most appropriate way to overcome that situation. In this regard, instead of asking 'what does an architect do?' issues such as 'what should an architect think?', 'how does an architect do?', or 'How does an architectural design emerge?' gain importance. Accordingly, in a contemporary and future design studio, learning should occur through a process of understanding that involves doing by investigating, criticizing, applying, analyzing, synthesizing, developing, evaluating, etc. in an intercrossed order. Lifelong learning calls for a meticulous communication-based pedagogy devoted to the individual learner and also to a critical learning community. Towards the end of the 20th century, the architectural design studio environment is described as a “forum” (Dutton, 1991), “the primary tool towards the development of professional

skills, culture, and ethics" (Ledewitz, 1985), "a field of reflective professional practice in the design process" (Schön, 1988), "system of values" (Salama, 1995). These definitions of architect-educator-theorists lead efforts for understanding design, and not mastering but educating -terms such as coaching and guiding also appear- literate, curious and productive individuals.

The work of Dewey, a pioneer theorist who revealed the need for innovation, freedom, and pragmatism in education, has guided a wide range of learning sciences and related disciplines. From Piaget (1970) to Kolb (1984), the broad literature of 20th century teaching and learning sciences utilizes Dewey's constructivist theories, which he described fundamentally with the concepts of 'impulse-observation-knowledge-judgment'. Dewey's works influenced the design-based education realm, beginning with Donald Schön's (1983) idea on reflection, still drawing out similar issues to the 21st century. Also, recent literature (Scheer, Noweski & Meinel, 2012; Quay & Seaman, 2013; Tarrant & Thiele, 2016; Dixon, 2020) shows the continual actuality of Dewey's approaches in design education and innovation.

Reflective thinking, aimed by the researchers for students to acquire in the model studio, is considered a good way to think about a subject seriously and uninterruptedly and to think about turning it over in mind (Dewey, 2022). In this pedagogical approach, reflection may also be an active and deliberative cognitive process involving a set of intertwined ideas that take into account underlying beliefs and knowledge when addressing practical problems (Hatton & Smith, 1995). Dewey (2022) defines learning in education as the area in which the student should realize and take the initiative, and the teacher is a guide and administrator. Education is; developing habits of curiosity, suggestion, discovery, and testing. In other words, it is the support of one's assets that form the substance for the habit of thinking (Dewey, 2022). Testing habits results in self-assessment in the process. Self-assessment refers to the participation of students in making judgments about their learning, particularly about their achievements and outcomes (Boud & Falchikov, 1989), and to students as active participants. It is a way of increasing their role in the reflection and evaluation of learning processes and outcomes (Boud, 1995).

Kolb (1984) shows Dewey's self-assessment and self-structuring learning process as a circular model (Figure 1). Although the process is depicted as a linear loop, the method treats the cycle's four stages as intertwined fluid phenomena. In his seminal book "Experience and Education", Dewey claims that any beginning point is determined by one's inherent urges and aspirations, but there is no intellectual growth without the reconfiguration and restructuring of impulses and desires. With the psychology of 'stop and think', an individual must suspend the imposed external first impulse and develop an alternative to this impulse through his own reflection and judgment. Intellectuality, or internal drive control through the integration of observation and memory, is formed as a result (Dewey, 1938). Observation is a process of discovery. It is an investigation to discover something unknown that is needed to achieve a practical or theoretical goal. The corresponding data to the observed phenomena constitute the material that needs to be interpreted, explained, and illuminated (Dewey, 2022). The processed material is transformed into knowledge, which is an understanding of what has occurred in similar circumstances in the past, partly from memory and partly from the knowledge, guidance, and cautions of others with more experience. Dewey further asserts that judgment is a factor of the intellectual process and defines judgment as putting what has been observed and recalled together to determine its meaning (Dewey, 1938). Reflexive thinking is how Dewey conceptualizes the intellectual process. The educator's responsibility is to create strategies that prevent students from acting on their first impulse. Taking this into account, making recommendations, and building contexts where knowledge construction will occur.

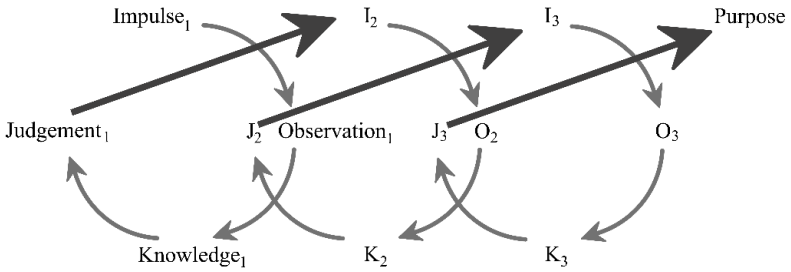

Figure 1 Dewey's experiential learning model illustrated by Kolb

3. A Methodology for Disciplinary Literacy in Design-Based Education

The learning strategy that dominates almost all architecture schools in the design studio learning environment is the production of an architectural project operating in the form of semi-structured experiential learning, and learning is tried to be enriched with various forms of representation such as visual, verbal, tactile, and written (Nicol & Pilling, 2000). The main components of this traditional educational process are: identifying the design problem, action-based activities that run as periodic lectures, student work of four different types -desk-based, poster presentation, re-examination via semester/midterm exam-, and final jury evaluation (Kvan, 2001) (Figure 2).

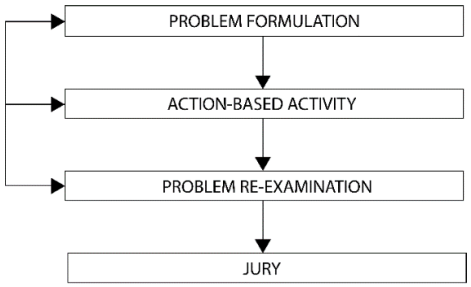

Figure 2 Traditional studio teaching cycle by Kvan

The disciplinary literacy phenomenon embedded as additional modes into the traditional studio setup is described in detail in Figure 3, with reference to Dewey's Model. In this context, the first part of this chapter presents the concepts for the setup and their context for the research methodology.

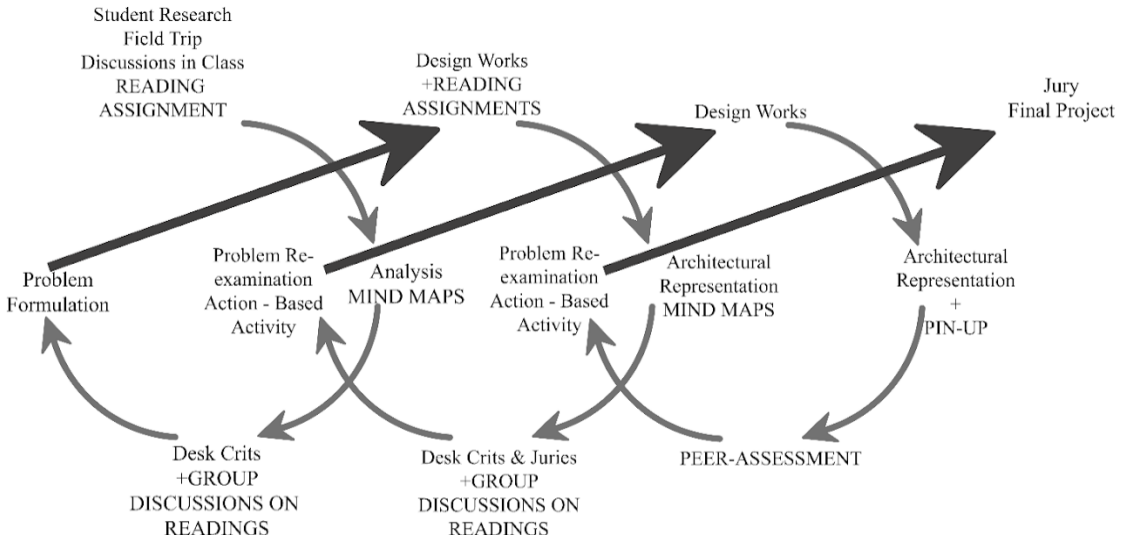

Figure 3 Additional modes in the model studio based on Kolb's diagram of Dewey's model

3.1. The Additional Modes of the Model Studio

3.1.1. 'Reading', 'Mapping' and 'Discussion'

In architectural education, students are expected to be active learning environment actors equipped with reflective thinking and self-assessment abilities. Supporting literacy acquisition, dependent on and/or independent from the field of vocational education, should also be considered a significant problem in the studio. Dewey's warning about impulse is instructive at this point. Although it is accepted that the impulse naturally exists in the individual, this is not always the case. To support the formation of impulse, pointing out the traces of the main problems in the discipline as a guiding theme has been the essential purpose of the disciplinary literacy exercise. Dewey (2022) exemplifies how observations of change have an intellectual order and help form a logical attitude, such as the singular events of a well-constructed story or plot. Similarly, the architectural readings chosen by the educators rooted students' impulses and observations that would contribute to the data production and project process during and outside the studio class hours. Dewey (2022) states that conscious summarization and organization become essential when a subject's knowledge is used to generate data to be transferred and used as an influential resource to address them.

In the model studio, students were asked to create a mind map from each reading exercise to summarize and edit (Figure 4, 5). The mapping technique was free, but at the same time, employing diverse mediums was encouraged. Through mapping, personal thoughts were discussed in large groups during class hours. The aim of this session was to lead the way in reflexive thinking. Such an environment -the sharing of inferences- would create the potential to generate new impulses, both individually and socially, as well as help each other to apprehend gaps in the comprehension process and think multilaterally.

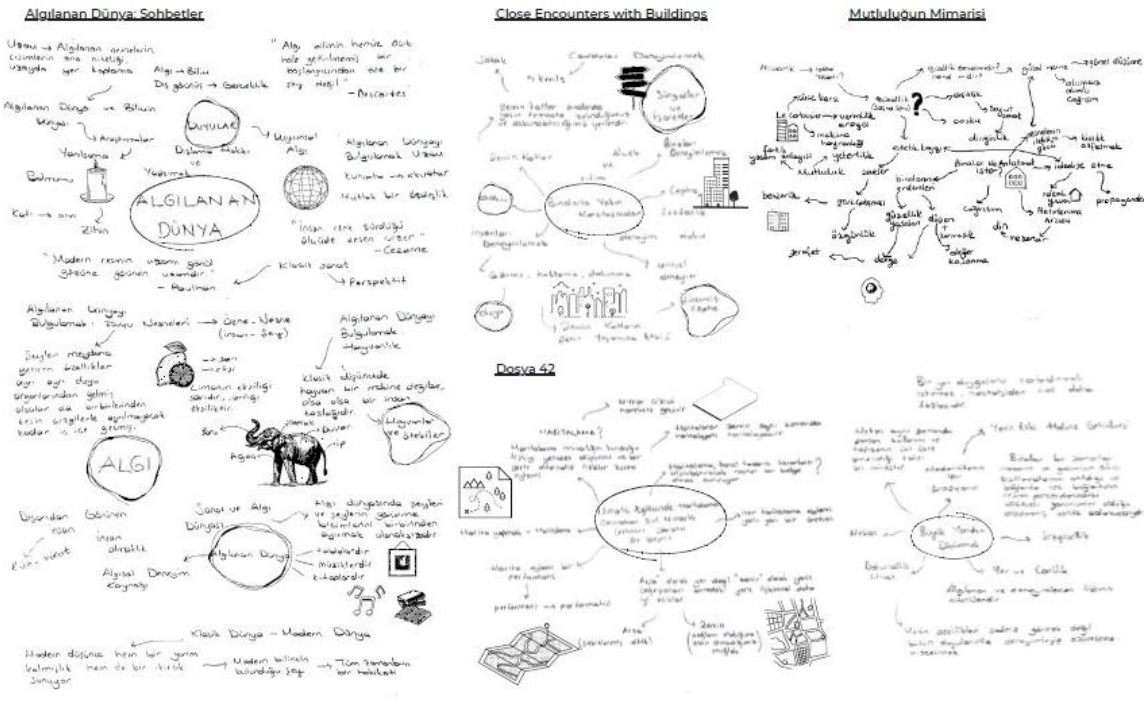

Figure 4 Examples of student reading-mapping collections, presented for in-class discussions

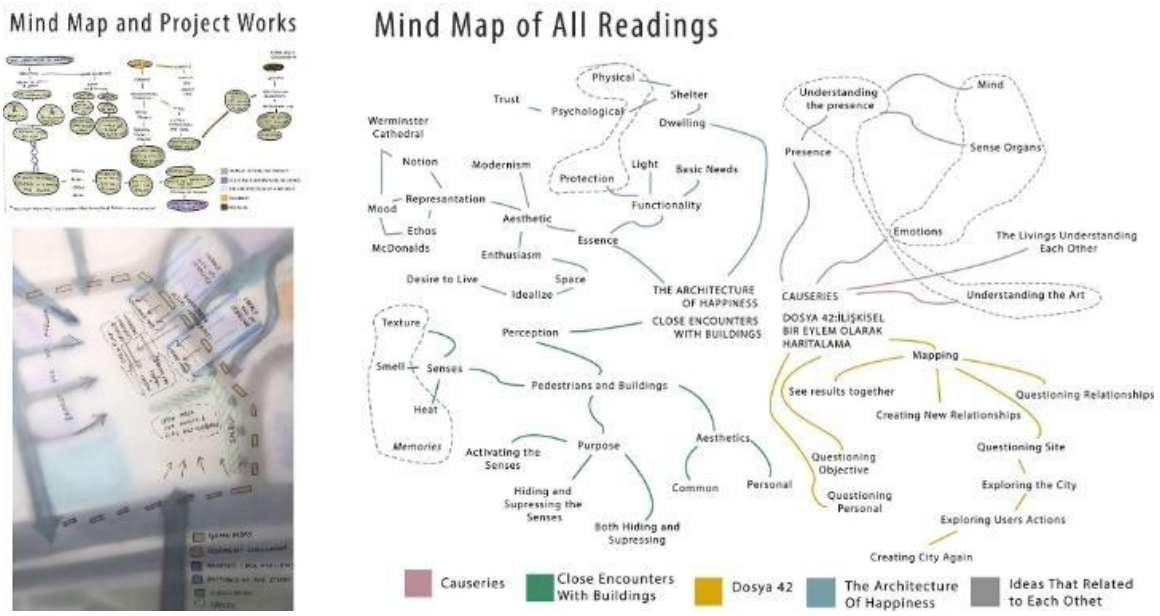

Figure 5 Examples of student reading-mapping collections, presented for in-class discussions

3.1.2. 'Peer Assessment'

Nicol (2014), who has extensive research in collaborative learning and assessment-oriented curriculum development, reminds us that commenting on a particular topic will activate highly complex thinking and writing skills. Newly acquired knowledge must be integrated into existing knowledge networks to create individual capital that can be utilized by students to successfully adapt to new learning contexts based on their cognitive processes. Therefore, making evaluative judgments is a process of constructing knowledge. According to Falchikov (2007), the peer assessment method can also be described as students' giving feedback or grades (or both) to their peers based on the superiority criteria determined for a product or performance. In addition, there are several components to the assessment. Boud (1995) clarifies that all evaluations include two steps: making decisions about the criteria of expected performance and making inferences about the related performance's quality. Well-designed assessment systems, as a part of the teaching-learning process but not for comparison of students, set clear expectations, create a reasonable workload, and provide students with opportunities for self-monitoring, repetition, practice, and feedback (James et al., 2002).

Corresponding to Boud's secondary evaluation step, the researchers added peer-assessment exercises in the interest of effective disciplinary reading. Peer assessment requires internalization of the reading material and reflection on peers, which also leads to the achievement of self-assessment skills. According to Knowles (1975), open initiatives that provide the opportunity to develop capacities should be implemented to expand self-assessment skills among all students. Thus, students might criticize their work directly or indirectly while applying the criteria to the work of others in the peer assessment exercise.

3.2. The Case Study

The following sub-chapters present the model design studio setup and process as a partial solution to the defined problem. The case study model studio employs the 'action research' methodology. The term, first coined by Kurt Lewin (1944), is "about working toward practical outcomes, and also about creating new forms of understanding, since action without reflection and understanding is blind, just as theory without action is meaningless." (Reason & Bradbury, 2001). Action research has three dimensions. First, it takes place in social practice. Secondly, it is a participatory activity in which researchers work in an equitable collaboration. The third is its method, which consists of 'planning', 'acting', 'observing', and 'reflecting' cycles (Swann, 2002). The first phase includes problem analysis and a strategic plan; acting refers to the implementation of

the strategic plan; observation involves evaluating the action with appropriate methods and techniques; and the last is a reflection on both the evaluation outcome and the whole research process. That can lead to the identification of a new problem, hence a new cycle (Zuber-Skerritt, 1992).

Such a model designed from scratch for experimenting with original content is considered action research in the literature. Reasons for attempting action research are as follows: First, despite the acknowledgment in mainstream architectural education that reflective thinking is the base of the design studio courses, a satisfactory reciprocation mostly fails to exist, including at our affiliated university. Secondly, as architect-educators without pedagogical formation, we and all colleagues should improve ourselves to do reflective thinking and self-assessment. It should be noted that this study does not propose or discuss an educational theory or its relationship to any design product.

The researchers decided to give ample place to the verbal quotes from student interviews in the acting and observing chapter, after reviewing the relationship between the evaluation of peer assessments and rich oral feedback addressing self-assessment. To summarize the interview transcripts effectively and objectively, the coding method is applied to discuss the findings to reflect on the research questions. Thus, the case study analysis employs both qualitative and quantitative methods.

3.2.1. 'Planning'

The research was conducted with 27 second-year undergraduate architecture students in Turkey, Gebze Technical University (GTU) Architecture Department in Architectural Design IV studio course. Two coordinator educators were the researchers of this study. The students were divided into two subgroups each led by a coordinator and an assistant teacher. The groups were balanced, including students having the highest to the lowest final letter grade they received in the previous semester's studio. The model studio setup was created by adding disciplinary literacy and peer assessment exercises to the traditional studio curriculum. As in the other studio groups of the same period, group analysis and juries were carried out by the two groups together formed as core jury partners. Furthermore, the additional modes in the model studio were also carried out in pairs. The model studio and the others were carried out simultaneously in the same 14-week period at GTU, but with different structures (Figure 6).

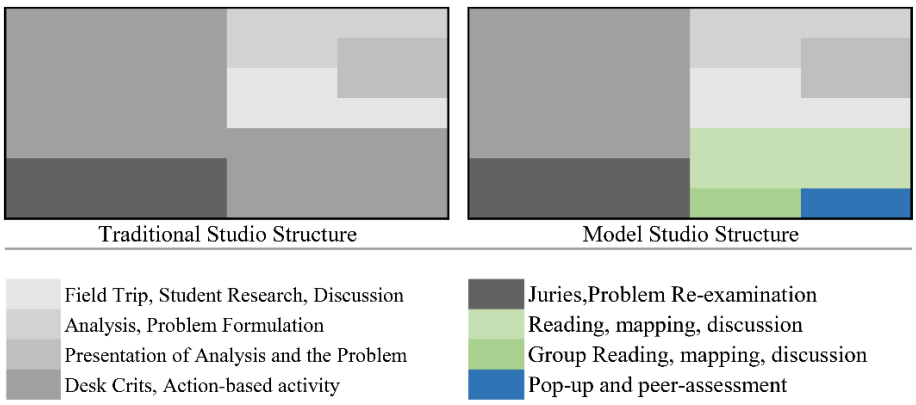

Figure 6 Traditional parallel studio and model studio structures compared

The studio process was initiated by giving the students a location in Tuzla, Istanbul. The first two weeks, the students should determine an architectural problem and propose a program within this framework. The analysis studies proceeded in groups. At the end of the second week, two invited academics in urban space held seminars. The first one on wayfinding, visibility analyses and basic syntactic approaches to understand and analyze the urban realm. The other one covered the cognitive mapping theory briefly, leaning on Kevin Lynch's applications. First jury assigned to group presentations spanned to the third week. The disciplinary literacy exercise was added to the studio process in the fourth week to last until the tenth. The traditional studio setup consisted of two four-

hour classes a week, where students usually illustrate an architectural design by synthesizing their analyses into potentials and situations related to the study area and subject. The model studio deployed the second class of the week to share and discuss the mind-map assignments covering the written and visual materials given in advance in the syllabus. These reading and visual materials under four main themes were uploaded at the beginning of the semester by the educators on the MS-Teams virtual studio channel, which also served as the discussion and collection platform for all the individual and group assignments. The themes are chosen for nurturing the architectural project brief to design “an elementary school building serving the community after school hours” in a vivid urbanized area neighboring a communal shore on one side. The selection of texts was based on their reading difficulty level, content being suitable for second-year architecture students, and meeting the learning outcomes criteria expected by the university department at this project level. The themes and relevant disciplinary reading material are briefly explained below.

Perception - Merleau-Ponty was one of the key figures in the development of phenomenology, a philosophical approach that emphasizes the first-person perspective, experience of consciousness. In this context, his seminal work The World of Perception provides architecture students with a broad philosophical foundation for understanding perception, embodiment, and spatial experience, which can help them gain an understanding of the difficulties related to designing spaces for children. Also, Merleau-Ponty's ideas have had a significant impact beyond philosophy, influencing fields such as psychology, sociology, anthropology, literary theory, art criticism, and architecture. In the model studio, teaching and learning how interdisciplinarity works was one of the aims. Thus this book was chosen as the initial reading to establish a phenomenological discussion ground at the beginning of the design process.

The short film “Steven Holl Architects: Ex of In House” was the visual reading-discussion material parallel to The World of Perception. This experimental residence by Steven Holl Architects explores the use of light, space, and geometry within architectural design. Steven Holl introduced 'seven point manifesto for explorations of "in"', one of which is "the architecture of "in" dominates space via spaces" (Steven Holl Architects – Ex of in House, Hudson Valley). The video tells how the boundaries between interior and exterior spaces of the house are connected, incorporating intersecting geometric forms and employing inventive construction methods.

Context - The scientific paper presenting the theories of the writer-architect’s many case studies in several urbanized areas, “Close Encounters with Buildings” by Jan Gehl, published in 2006, presented several insights about living between buildings, one of which was that façade design should be pedestrian-friendly. Briefly, the article focuses on the context of ground-floor architecture and its key function for a livable city and healthy community.

Tectonics - The material presented in “Practical Poetics in Architecture” by Leon van Schaik is practical, with an emphasis on analyzing and explaining the sense of poetics at work in designing and creating architecture, yet they remain richly related to writings of Gaston Bachelard and Steen Eiler Rasmussen. The book, published in 2015 contains numerous analytical diagrams and analyzes featured contemporary projects using plans, sections, and pictures. Students were tasked with reviewing and representing the projects chosen from the book as a group project, using van Schaik's sketches and interpretations.

Visualization & mapping – The journal “Dosya 42: İlişkisel bir eylem olarak haritalama” (Folder 42: Mapping as a relational act) published by Ankara Chamber of Architects in 2019 included five short articles. As in the editor’s introduction (Alanyalı Aral, 2019), mapping makes variation and deepening possible through coexistences not possible on conventional maps. Aiming to reveal the unprecedented diversity of data and their connections with the 'place' and each other through the search for new and original languages and methods is an action that can be defined as fundamentally relational. These texts are provided to help students comprehend mapping theoretically and visually, as well as to develop their mental maps for reading discussions and cross-context debates in seminars and studio critiques. However, in this conceptualization and

representation method, which most of the students explored for the first time, these readings were postponed until later weeks because the researchers wanted to see the students' impulsive works first.

In line with these, in the ninth week, to write consistent and valuable criticisms in the assessment tasks, the students were asked to read the comprehensive content and map their comparative analysis within themselves and with each other, and then to represent them together with the project concepts they designed in parallel in the process. The class was devoted to general discussions and criticisms. To foster independence and autonomy and support future learning (Falchikov, 2007), interactivity was encouraged by the educators to take the first steps of critical self-assessment and peer assessment abilities.

One week before the final submission, in the studio class, students were asked to make a preliminary submission with five-minute poster presentations that included the exploration-synthesis-interpretation phases of their projects. During the presentations, the educators did not interrupt or comment. The students were asked to listen to each other carefully and take notes, considering the main topics of the theoretical framework. The goal here was to maximize students' capacity to listen attentively to one another. However, since all students' comments to each other would disrupt time management, the educators formed peer assessment groups of three to four people and announced them at the end of the class. The group members were chosen as a mix of students whose general performances within the scope of the studio course were high-medium-low. The students examined the projects and made detailed remarks to the following questions pre-structured by the educators:

1. Examine the project through its relationship with the place. How do you evaluate the proposal in general, and why? (Consult the book Practical Poetics in Architecture and the seminars.)
2. Evaluate the project within urban life, indoor life, and other created values. How did you find their approach, and why? (Consult the books Practical Poetics in Architecture, The World of Perception, and the film Steven Holl Architects: Ex of In House.)
3. Evaluate the project within its close surroundings: encounters with the building from the sidewalks and seashore walking flows. Specify the reasons. (Consult the paper Close Encounters with Buildings and the seminars.)
4. Evaluate the project in terms of tectonics. How do you read suggested coatings, materials, configuration, solids and voids, geometry, harmony, etc.? What intangible conditions does the tectonic formation of the structure create, and why? (Consult the book Practical Poetics in Architecture and the film Steven Holl Architects: Ex of In House.)
5. Evaluate the facades of the project throughout its indoor and outdoor lives. How would you interpret the approach, and why? (Consult the paper Close Encounters with Buildings.)
6. Evaluate the diagrammatic explanations describing the project. Explain what kind of information it reveals and its qualifications. (Consult Dosya 42 journal and seminars.)

Students sent the assignment back to the educators in a limited time after the class, and the educators included the peer reviews in the next open crit.

3.2.2. 'Acting and Observing'

Four mind mapping assignments acknowledged as a reflection of data production from the information were examined. Given tasks were evaluated with poor-moderate-good qualitatively and expressed quantitatively with 1-3-5 scoring. Since the students made the mapping of the tectonic-themed reading requested as group work in the form of a project presentation, they were not found suitable for the given scope and were excluded from the evaluation chart. Considering the general failure seen within the groups in mapping the tectonic-themed reading requested as group work, a comprehensive reading was given on the mapping-themed as a reading assignment

for the eighth week. In the eighth week of reading, only four of the twenty-seven students submitted a mind map and participated in the discussion. While the maximum score in this evaluation for four-week of work was determined as 20, S1 (Student 1), S2, S4, and S5 each got 15 points, and S3 got 18 points.

The peer assessment exercises of those five students, who were successful in reflecting on disciplinary reading, were examined as shown in Table 1. Table 2 includes a description of the coding content and some explanatory excerpts from the students' answers. S1 and S5 gave qualified answers that were highly related to the readings in the peer assessment. S2 and S3 also formed a connection with the readings and had sufficient answers. S4 made fewer references to the readings in her answers compared to others and answered the questions with shorter expressions.

Table 1 Evaluation of Student Expressions with Codes

	Que01	*Que02*	*Que03*	*Que04*	*Que05*	*Que06*
S1	R1Q1	R1Q1	R1Q1	R2Q1	R1Q1	Q1
S2	R1Q1	R2Q1	R2Q2	R2Q1	R2Q1	QX
S3	R2Q1	R2Q2	R1Q2	R1Q1	R2Q2	Q2
S4	R3Q2	R2Q2	R2Q2	R3Q2	R3Q2	Q2
S5	R1Q1	R1Q1	R1Q1	R1Q1	R1Q1	Q1

Table 2 The Coding System and Sample Excerpts from Student Interviews

CODING	
The relation to readings	**The quality of expression**
R1: one-to-one related	Q1: in the framework of the question; comprehensive; descriptive
R2: tacit related	Q2: in the framework of the question; superficial
R3: unrelated	QX: outside the framework of the question; unrelated
EXCERPTS	
R1Q1 _ S5 to Que3: “Facades create a hybrid space among themselves. These spaces constitute an alternative for the transition to the courtyard. (...) The users outside the building are drawn into the circulation of the building thanks to these voids.”	
R2Q1 _ S3 to Que1: “The structure seems to emphasize functionality instead of relating to the place. (...) missing its relationality in terms of poetics, appealing to emotions.”	
R2Q2 _ S4 to Que2: “Although the spaces and their flow were considered, their reflection on the facades that relate to the environment could have been better.”	
R3Q2 _ S4 to Que5: “Could the geometry make more sense and relate better to the scenario? Could the voids be more meaningful?”	
Q1 _ S5 to Que6: “The concept in the diagrammatic explanations and the spatial relationships in the bubble diagram are understandable. (...) The structure doesn't describe its tectonics and function with any diagram.”	
Q2 _ S1 to Que6: “Analysis of Tuzla and the users, spatial and temporal diagrams are explanatory. Functions could be a little clearer.”	
QX _ S2 to Que6: “When I look at the plans and the diagrams in the project with the render, the plans were readable.”	

After the process of evaluation and the selection of successful students, the study was completed with the discovery of the students’ views and experiences. The researchers decided to interview students whose quantitative value of mind maps and qualitative value of peer assessment reports are superior, regardless of how the added exercises relate to the students' design practice. After a certain period at the end of the term, one-to-one semi-structured interviews allowed these five students to reflect on their own projects. Also, data for further studies was collected by allowing the students to evaluate and criticize the model studio setup. The content of the interview consists of four essential questions with follow-up questions if needed:

1. Would you evaluate the studio's process?
2. Would you evaluate the reading-discussion exercise and the process of forming mind maps?

   Follow ups: The degree of difficulty of the readings? Reflections on the project? Did the exercise affect your view of the discipline of architecture? How would you evaluate the thematic reading collocation?
3. Would you evaluate the process of examining your peers' projects?

   Follow ups: Did this exercise make you notice an area in the readings that you didn't spot? Has it changed the way you view your project? How do you critique yourself when you consider the peer assessment questions?
4. How do you evaluate the effects of the readings on the final submission projects?

3.2.3. 'Reflecting' – Findings and Discussion

All student interview reports were coded with the MAXQDA-2022 qualitative data analysis tool. Table 3 presents the codes created concerning the research questions.

Table 3 Coding and Relations of Dependent and Independent Variables in the Model Studio

CODING		**dependent variables - cognitive abilities**		
		Reflective Thinking	Self-assessment	Impact on Design Thinking
independent variables - additional modes	DISCIPLINARY READING	9	3	12
	MIND MAPPING	7	0	0
	DISCUSSION SESSION	2	3	0
	PEER-REVIEW	2	12	4

Considering the variables, significant factors in the development of reflective thinking were disciplinary reading and mind-mapping exercises. In addition, there was no discourse on the effect of group work. Impulse, observation, knowledge, and judgment phenomena, considered the main components of reflective thinking (Kolb, 1984), were followed in various forms in the students' statements shared below.

Specific to the reading exercises; "(...) learned a lot (...), especially from the readings (...) photographed the facades to see if the complex facades (...) that the book tells me and to see which one attracts my attention more", "(...) there was the eye-related [book], the sense-related (...) created an awareness. (...) the truth is more important than what the eye sees (...)", and "(...) used to see every building as a plan in the first year of architecture. Now I look around the street level to understand what this building offers me (...) they actually (...) changed my point of view" statements of students contained traces of observation and impulse. Regarding knowledge construction; students' descriptions "(...) [the reading material] Close Encounters with Buildings (...) describes the user's relationship with buildings. (...) It opened my eyes to what I do.", and "We experience enlightenment (...) whenever we read" were explanatory. About transforming knowledge into judgment, "I saw that we could have a wider perspective with readings. (...) in [last semester] project, (...) perceptions regarding the environment (…) have remained shallow. This time, (...) the readings helped me to look more broadly (...)" and "We should not evaluate the building alone (...) need to consider its setting, (...) building gains meaning with its surroundings. (...) In fact, it becomes more efficient with the work done during the analysis process." quotes were examples. For judgment formation, "In project A, you told me that there is a sit-in. And you showed me project B without saying anything. There is such an area here. But will I be able to realize it by myself? (...) Frankly, I couldn't have done that without reading the books." "I think we wouldn't understand the [design] parameters." were relational statements.

In terms of the mind map exercises, “I forget very quickly. (...) Now, the contents are still in my mind because I made maps three or four times.” expression referred to the memory-related aspect of knowledge construction. Similarly, “(...) extracting that [mapping] was like a summary. When you glance at it, you remember what you read.” and “I could express myself more easily (...) I remember when I checked on maps (...) I had the opportunity to say something.” were examples of simultaneous observation and knowledge construction. “During the reading (...), I perceived it only as a task (...) Now I make my own maps (...)” and “(...) it was great (...) I need to understand how to create maps (...) need to interpret what I understand.” phrases supported the judgment phenomenon.

Self-assessment ability evaluation showed that the peer assessment exercise played a significant role in developing the capability. As Knowles (1975) notes, autonomy in learning, particularly self-learning, is associated with self-assessment. A student's assertions, “I directly opened his/her assignments and viewed the reading maps. (...)There were some that I can use in my project. Both the reading and the project contributed to my project”, showed a learning approach improved independently. Expressions of three students; “While examining their projects, I noticed my own shortcomings. (...) I tried to make an objective comment on mine as well (...) it made your [the educators’] comments more understandable.” “Before [peer assessment], I couldn’t give myself a clear comment. But after commenting on three people (...) I was able to observe myself more objectively.”, and “It seems that there isn't any problem with our own project (...) while giving criticism to others, (...) I also realized that some of the problems were also in my project. (...)” indicated a key finding that extending the capacity to criticize and self-criticize ensures the emergence of reflective thinking.

Studio-based learning, by definition, consists of interlinked stages in the design process. In this respect, the effects of additional modes of design thinking were a natural issue of the research. Thus, the student's answers to the last question demonstrated various levels of reflection. A student stated that Close Encounters with Buildings reading was the most beneficial, “(...) caught my attention the most (...) I implemented many ideas (...)” through reference to a spatial setting; “(...) in front of every building, it can be a waiting area (...) a smoking area, a place to sit and talk (...)". Through discussing all the readings, the expressions, “(...) deduced certain parameters from the readings (...) While designing the project, I went back to parameters to figure out if the project is consistent (...)" also showed the learning related to impulse and observation and pointed out the contribution of these processes to designerly thinking. Besides the two students explaining the effects with explicit examples above, other students made implicit comments. One student evaluated its effect on design as a motivation-enhancing and nurturing activity to analyze processes: “(...) when I could transfer readings to the project, I realized that it is joyful (...) by collecting data from the environment (...) becomes more efficient with the studies during the analysis process (...)”. A student stated that she/he made inferences from the readings, but those did not affect her/his practice because of unsuccessful time planning. The other student evaluated the exercise positively and stated that it contributed to the design process. However, the answers could not have been deepened.

The essential problems of the research are detailed above. Also, further findings were gained during the interviews. The students' positive and negative critiques and suggestions for improvement were considered valuable during the evaluation of the model studio exercises.

To understand the implicit information uncovered from the answers, direct questions linked to the exercises were posed afterward. It was asked if they had any suggestions to benefit from the peer assessment exercise. The general feedback data is on the probability of extending the exercise over 14 weeks. All students stated that they would prefer this possibility: “If we had done [peer assessment] one or two more times in the middle of the semester (...)” or “other critiques [peer assessment] (...) could be done (...) also by the previous juries”. Those predictions indicated that peer assessment exercises would have been more beneficial if they had occurred more than once in the process.

One student offered some ideas for varying representation and communication techniques in mapping, noting that creating mind maps is a stiff yet beneficial exercise: “(...) sculpture made by hand and the writing on the edge of it and taking a photo of it later (...) I understand mind maps better, especially with the examples you recently showed. (...) I had the most difficulty with creating a mind map”; “(...) [combining the maps] every week would be helpful (...) as a guide (...) last time [designing process], I worked by opening and viewing them all the time”. A student criticized the order of readings placed in the syllabus in terms of their effect on design practices: “(...) would prefer to read those related to [urban] landscape beforehand (...) because the last weeks I struggled (...) how I can adapt this to my project now? (...)”.

A remarkable analogy by a student to describe the impact of various teaching strategies was as follows: “[Readings] benefit us like enzymes. We don't see them openly (...) but they have an effect. But [peer review] (...) it's like a color. We see it, absorb it, and feel it. (...) When I saw an example or saw other methods, I realized that I needed to change more (...)”. The analogy depicted the adversity of evaluating the outcomes of reading-discussion exercises without tangible material.

The weekly reading homework and the class reserved for discussions seemed to cause stress in the students. The causes dwelled on time management, taking the time at home to prepare mapping assignments, and peers in parallel studios receiving criticism on the second class of each week. Interviewed students shared their concerns as follows: “Will my project finish? (...) Getting critiques one day a week instead of two, (...) at first there was a tension, will reading put us back?”; “(...) but we couldn't spend much time on the project, and we didn't get much critique.”; “Maybe we just had a harder time. (...) Because I received less critique, I was very worried.” There were also suggestions to avoid anxiety. A student shared her/his hesitation and proposed her/his solution simultaneously: “If it didn’t cut down on design [studio] day, (...) if some things didn’t keep up, we said, I would catch up if there were no readings. Actually, not.” Another student suggested that the exercises should still exist as an activity for out-of-studio hours or that it could be a package application at the beginning of the semester. Although they acknowledged extra modes in the interviews, they regarded the exercises as separate tasks rather than elements that would improve the design process. They might consider that additional studies have made a secondary contribution based on this reasoning.

4. Conclusion

This research study aims to contribute to the theory of education in the field of architectural design studios by making the model application accessible and reflective for other educators. The plan was to encourage self-reflection on the learning process, provide opportunities to control and adapt learning and observe their contribution to design thinking. The model studio structure presents a series of tasks that nurture critical thinking and internalization skills through reflective thinking and self-assessment abilities.

In general, students used vivid metaphors to describe their learning, which shows a high degree of reflective ability. The most significant findings emerged from the interviews that the reading-discussion setup has a positive effect on developing students' skill sets, especially reflective thinking, and the systematic peer assessment exercise shows a remarkable contribution to acquiring self-assessment ability. Another interesting fact is that the interviewed students mentioned discussing their work more with one or more peers because of the homework -in their words, the reading and mapping exercises. Our students were unmotivated to talk about their projects during the online studios during the research period. We understood that they communicated outside studio hours about their inferences from the given exercises and ways of design thinking, especially after the peer review exercise.

As seen in Table 2, S4 did not complete his peer assessments with one-to-one references to the readings. However, the interviews revealed that the student was more well-informed about the reading material than her/his peers. This situation indicated the need for multi-dimensional questioning for the reliability of the general research results. Moreover, for students with different

representation skills and characters to be active participants, it is recommended to diversify the exercises during the studio process.

The research should be regarded as a pilot for further studies. The participants for the interviews were selected from those who received the highest qualitative and quantitative evaluation scores in the reading-mapping assignments. Therefore, there was a concern that these students might not represent the general population. However, the findings were promising. Except for one interviewed student, the final grades of the other participants were not among the most successful. It might be due to two accompanying reasons. Since the exercises were not graded, the highly grade-oriented students did not show the required care. The second is; since the overall grading was on the final product, reflective thinking, and self-assessment skills were not part of the final marks.

Concerning these issues, the suggestions for future studies are that each exercise should stand clearly in the syllabus with its corresponding grade, and the evaluation of fulfilling learning outcomes should include individual growth as well as vocational growth. Findeli (2001) underlines that if design problems are not handled in a unidirectional and linear process, the concept of the project gains a stronger theoretical position. In this sense, the only way to transform one situation into another is not to produce an absolute material object. In studies based on Dewey's learning model, experiences are based on the development of students' capacities and readiness. The theorist underlines even at the beginning of the 20th century that in evaluating the quality of experience, it is necessary to look at the effect of the experience on later experiences. In light of these discussions, it would be appropriate to include the students in additional research using a longitudinal research design.

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Resume

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Can basic design be the base of urban planning education?: A case-oriented quantitative measurement model

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Abstract

The study of design is considered as a scientific activity; however, the integration of urbanism with design thought has remained limited, which can easily be observed in the contemporary urban areas, especially in the developing countries. Thus, increasing design thinking ability and the integration of spatial planning should be a priori within urban planning and design education, and thus be practiced preventing the emergence of chaotic urban spaces. The widespread view is that basic design education increases the planning and design skills of students; therefore, it is offered during the first stage of planning education. Within the scope of the basic design courses, students experience using and transferring the formatting tools such as line, stain, texture, color, volume, light-shadow, abstraction, and perspective effectively. They learn design principles such as suitability, unity, sovereignty, contrast balance, repetition, direction, measure, range, value, motion, and hierarchy. Gestalt visual perception principles adopted by the Bauhaus school of design are often applied in basic design education. The process is completed by providing technical drawing lessons on principles and abstraction parameters. Teaching is a planned process, and objectives are determined through the cognitive-affective and psychomotor learning areas known as Bloom's Taxonomy of Learning Domains. So, is the current education paradigm accurate and measurable? Is it possible to utilize it to improve planning and design education? For this purpose, this study researches the contribution of basic design learning outcomes to the urban planning studios and the relationship between achievement levels of students in relevant courses through knowledge and attitude tests. The research model is a case study, based on the relational analysis of quantitative data, which quantitatively propounded that the relationship between two different teaching processes is linear and positive.

Keywords: basic design education, bloom's taxonomy, gestalt principles, planning education, urban planning

1. Introduction

Basic design education is given to students at the first semester of the Faculty of Architecture, for so long. Within the scope of the basic design courses, students experience using and transferring the formatting tools such as line, stain, texture, color, volume, light shadow, abstraction, and perspective effectively. They learn design principles such as suitability, unity, sovereignty, contrast balance, repetition, direction, measure, range, value, motion, and hierarchy. In subsequent basic design education, the Gestalt visual perception principles adopted by the Bauhaus school of design are often applied. The process is completed by providing technical drawing lessons on principles and abstraction parameters. Teaching is a planned process, and objectives are determined through the cognitive-affective and psychomotor learning areas known as Bloom's Taxonomy of Learning

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Domains. In general, basic design education covers all three areas, so the measurements related to these areas were created as a case study. Accordingly, grades of the students at the Department of Urban and Regional Planning (URP) in any Turkish University (Anonymous University) were determined as a sample study group (Figure 1-2).

Figure 1 Studio 1 - Basic design presentations (Anonymous University, 2016)

Figure 2 Visual abstractions from animals (Anonymous University, 2016)

In subsequent basic design education, Gestalt principles, abstraction parameters and technical drawing studies are covered at the end of the process to ensure the effective use of these tools in the future of abstract thinking and to have the ability to define the relationship between figure and ground. In essence, the frame of reference is important not only for defining the visual world, but also every given area. These two and three-dimensional exercises in the abstractness of the visual world can also be applied to the real world. The acquired basic design skills can be used in the

arrangement of urban spaces, and elements such as stratification, private and public spaces, structure, spine, and edge, which are all shaped within the framework of Gestalt principles (Gunay, 2007). Thus, this study asserts that the ability of abstract thinking will render students more successful, especially in design-based courses in urban planning education.

For this purpose, this study investigates the literature on design thinking and the relationship between the achievements at the courses of basic design and the success at the courses of urban design and planning studio. Accordingly, the knowledge level, affective level, and psychomotor skills of students at the Department of URP in an Anonymous University concerning the basic design studies were measured through the evaluations of the academic jury and online knowledge tests and the final grades were compared by multiple linear regression model.

This study aims to prove that "basic design" really provides vital and fundamental knowledge to URP students and thus, should be encouraged in the early stages of undergraduate education. In literature, the effect of the basic design courses on other design-based courses is frequently emphasized (Gunay, 2007; Caliskan, 2016).

Denel (1979) clarifies that the aim of design education is to "conceive, perceive, organize and communicate as wholes as opposed to fragmented and unrelated information". Accordingly, Gunay (2007) declares that the importance of basic design education in the first semester of URP departments is to teach the essentials of design through visual representation of the environment where seeing and perceiving abilities are provoked, creating the most suitable conditions to display abstract-concrete relationship. By these means, students will be able to apply the concepts of basic design to the production of the environment (Gunay, 2007).

However, it is also seen that the effects of the basic design courses on other design-based courses have not been quantitatively investigated in depth in the literature. Therefore, this study sets up an experiment aimed at measuring the influence and impact of acquired basic design knowledge upon later studios through a design test for beneficiary students in an Anonymous University.

2. Design Thinking

2.1. Design Thinking and Education in Urban and Regional Planning (URP)

Design thinking in urbanism is rooted in the urban theorist Geddes (1915) who saw the city as an evolving organic system that is planned through rational survey and analysis and takes design as an objective-driven activity, rather than an art. The Geddesian approach transformed design thinking since the 1960s and design has become a rational problem-solving activity, which is still a common approach in the contemporary planning education. Urban design as an emerging interdisciplinary field of relevant disciplines, all of which bring their own background information in design thinking and practice. Designers work through similar activities within their creative processes; yet there is still something lacking in the universal definition of urban design (Caliskan, 2016; Casakin et.al., 2016).

Design education is mostly implemented in the studios/ateliers in the Faculties of Architecture and Fine Arts. The studio can be defined as an educational setting where students work individually and/or in groups. In the studio, design activity usually becomes a problem-solving process, which is a major challenge for design education (Casakin et.al., 2016).

Several scenarios may help students to develop a useful knowledge base, improving the coordination and exchanging information through teamwork, especially in multifaceted design tasks. The results of Casakin et. al.'s study (2016) reveals that an educational approach of defining problems and analyzes solutions, mainly from a technical and functional perspective. This approach may help students gain a basic understanding of the design activity from a technical and functional perspective while scenarios are also crucial to enhance design creativity. Both methods are

necessary for design education and can promote the exploration of innovative ideas and design solutions.

According to Kvan and Jia (2005), there are several examples of studies in educational learning and design studios in the literature that show design principles that are learned in the process of education are not adequately reflected in architectural applications. Schön (1983) identifies that learning in the design studio is developed through a process defined by him as "reflection-in-action", which is a form of constructive design thinking (Waks, 1999; Kvan & Jia, 2005). Through this thinking called abductive reasoning and/or reflection-in-action, the design practice becomes a process of problem-solving, through the selection of the one best suited to establish ends. This process involves an experiment where a designer can develop tacit understandings of repetitive experiences and can make new sense of the situations of uncertainty or uniqueness (Schön, 1983).

Demirkan and Afacan (2012) identified three basic factors that should work together for the creativity in design education: (1) novelty and affective characteristics of the artifact, (2) elaboration of characteristics that are integrated with geometric and figure-ground relations and harmony of design elements, (3) rhythm, repetition, unity, order, and several design elements. In this context, the basic design elements constitute an important basis for all design-based courses, and it is important to create an interdisciplinary interaction.

In addition, Shih et al. (2006) reveals that complex cooperative or competitive behaviors can be seen in design studios. Repeated iterative peer assessment, inter-group competition and information transparency appear to be the main factors promoting collaborative learning in the design studios. It is determined that the group studies in design studios enrich collaborative learning (Shih et al., 2006). In this context, promoting interdisciplinary groups in design studios, especially in the urban design courses can reduce interdisciplinary conflicts both in educational and professional life.

This study focuses on the design education and its reflections on the Departments of URP, particularly in Turkey, most of which have basic design courses in the first semester aiming to equip planning students with design thinking. To compare the mainstream planning education; firstly, course schedules of top 10 undergraduate URP programs in the USA (The Top Schools for Urban Planners) , top 10 undergraduate URP programs in Canada, top 20 undergraduate URP programs in Europe, and a total of 35 undergraduate URP programs in Turkey are examined to identify the presence and the number of basic design courses in URP education (All Universities with Urban and Regional Planning Programs | YÖK Undergraduate Atlas).

It is seen that planning schools in USA mainly focus on more contemporary issues such as climate change, equity planning, community planning, environmental management, sustainability, and urban design in the first grade, rather than basic design. However, introduction to design and basic design courses remain in the department of architecture. When planning schools in Canada are evaluated, a similar situation is seen. There are courses about contemporary issues such as community planning and climate change, planning studio and urban design. In addition, some planning programs are offered under the architecture, fine arts, and geography departments. When the planning schools in Europe are examined, it is seen that planning education, especially in the UK, is in relation to the Geography Department, and it focuses on contemporary issues, sustainability strategies and urban design. Also, among the programs that have both architecture and urban planning, there are contents for basic design within the first semester studio of architecture (EduRank, 2021).

These planning programs usually give information about 2D-3D representations and abstractions of urban space in urban design courses (e.g., University College London (UCL), Newcastle University). Therefore, one can interpret that although Gestalt theory is not offered as a basic design course or directly as a theory in USA and Europe, it is still taught to students in various design courses, and students essentially because of its gains as a tool in planning. Therefore, it can

be inferred that basic design or Gestalt theory is still considered valid in mainstream planning education.

The pursuits of the studio instructors also differ from the laboratory studies in other scientific professions. Face-to-face communication through critiques, as well as panels and juries are required to develop projects. In other words, instructors require discussions with students to guide them to enhance their design knowledge. This process is quite different from other theoretical courses and is conducted in a similar manner (TUPOB, 2019). However, the post-pandemic era forced Universities to conduct online/hybrid courses, which inevitably affected and differentiated the design education process as a result.

Gunay (2007) proposes a first-year URP studio model for a Turkish university, which gives essentials of design, Gestalt principles, abstraction, and application of the basic design concepts to the spatial planning. He remarks that there is no universality of URP education in the world; however, any planning school will teach procedure, substance and gaming depending on the political conjuncture and/or the contemporary urban issues. In the model he proposed, main emphasis is put on the basic design education and Gestalt theory, which affect the three phases of the production of urban form: (1) two-dimensional subdivision of land (ground), (2) bulks of the structures, three-dimensional forms on the subdivided pieces of land (figure), and (3) architectural styles. It is known that urban planners are mostly effective in the first two phases; yet the third phase requires extra interdisciplinary urban design skills. The urban planners designing the composition of urban form in two- and three- dimensional terms should be equipped with those visual skills to form groups of structures and the sense of belonging for the totality of the environment (Gunay, 2007).

Thus, the students of URP departments should be educated to be more sensitive and creative to the urban environment, besides the rational aspects of their profession, to better communicate with the architects, landscape architects, industrial designers, and to become urban designers. At this point, the basic design learning domains of Bloom's taxonomy should be taken into consideration in URP education.

2.2. Bloom's Taxonomy (BT) and Basic Design Learning Domains

According to Bloom (1956), learning actualizes in three domains: cognitive, affective, and psychomotor. Although BT has been updated since 1956, a regulation (adaptation) in the cognitive field has recently been made by Anderson et al. (2001) leading to the Revised Bloom's Taxonomy. The basic design education includes a two-stage process based on the development of visual perception and shaping (e.g., drawing, painting). Basic design education in URP departments has also adopted BT starting with the transition of the Bologna process in Turkish Universities in recent years. Especially in the studio courses, the proficiency of the lecturer, the number of lecturers, the role of the critiques received, the physical environment, interactions and other stages affect the basic design learning domains.

Table 1 Bloom's Taxonomy (Bloom, 1956; Anderson et. al., 2001)

Cognitive Domain		Affective Domain	Psychomotor Domain
1956	2001 (Revised)		
1- Knowledge	1- Remembering	1- Receiving	1- Perceiving
2- Comprehension	2- Understanding	2- Reacting	2- Constituting
3- Application	3- Applying	3- Evaluating	3- Implementing by guidance
4- Analysis	4- Analyzing	4- Organizing	4- Mechanization
5- Synthesis	5- Evaluating	5- Value attributing	5- Complicated behavior
6- Evaluation	6- Creating	-	6- Improvisation
-	-	-	7- Creating

2.3. Proposal of a Case-Oriented Quantitative Measurement Model

The common view is that basic design education increases students' planning and design skills, so it is offered to students in the first stage of planning education. But is the mentioned education paradigm correct and/or measurable? If measurable, can it be utilized to improve planning and

design education? The knowledge and practices accumulated throughout history undoubtedly show that there is a correlation. However, quantitative measurement of the structure, framework and severity of the relationship mentioned may be an opportunity to capture the deficiencies of planning education. For this purpose, it was investigated whether the information acquired in the basic design course positively affected the further design-based courses. And finally, it was seen that the grades of the basic design courses, the basic design knowledge assessment test scores and the attitude scale for basic design course scores were correlated with the grades the students received in design-based courses. In this respect, item analysis was performed and the relationships between variables were determined using the multiple linear regression model.

3. Methodology

This study is a hypothetical examination of the teaching process in an Anonymous University, Department of URP. The hypothesis subject of the research is "The knowledge acquired from the SBP 100 - Basic Design Studio in the first semester affects achievement in all urban design-based courses taken in the subsequent learning processes". While student's achievement and attitude in basic design education constitutes the dependent variable, the success in courses focused on urban design is the independent variable. To explain the cause-and-effect relation, it is necessary to make a relational analysis between the success levels in basic design and other design-oriented courses. Accordingly, the research model can be explained as a case study based on quantitative data.

In this study, cognitive achievements, and attitude of the students from the basic design courses were identified through an online survey to be compared to their previous grades in the design-based courses. This process was managed through a three-staged model including a survey and a multiple linear regression. The flow chart of the methodology is provided in Figure 3.

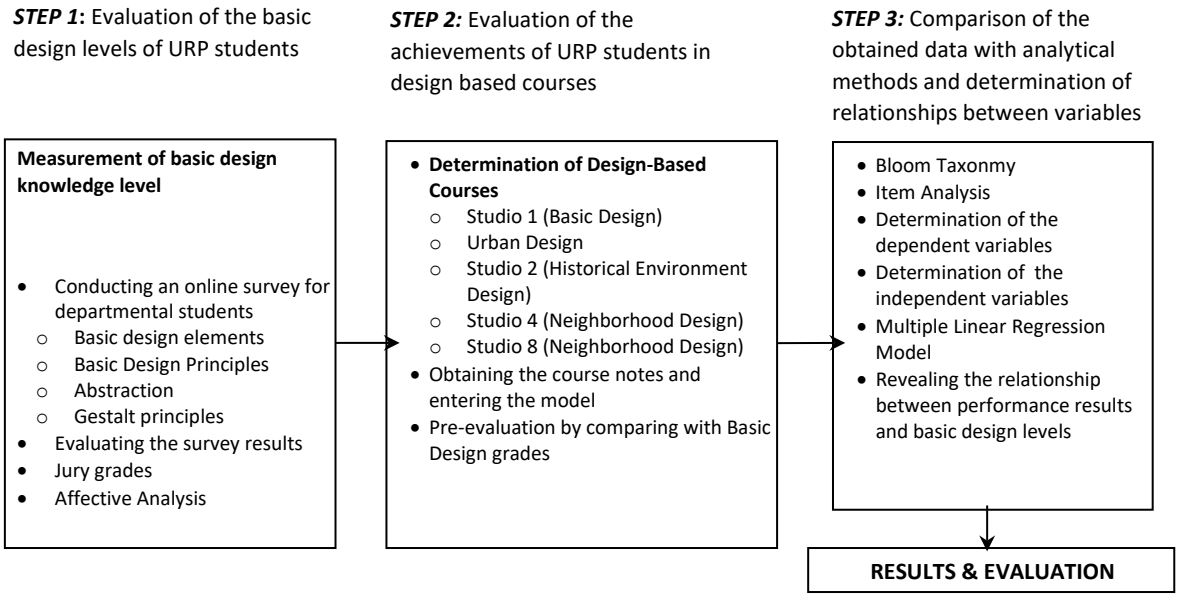


Figure 3 Flow chart of the model

In Step 1; a survey was applied to department students to measure their knowledge level of basic design. This survey was developed as a multiple-choice test and aimed to assess the students' theoretical knowledge and ability to distinguish between basic design elements, principles, abstraction, and Gestalt principles. Following this, an affective analysis was conducted to understand the basic attitudes.

In Step 2; design-based courses given at Anonymous University, Department of URP were identified. The grades of the students who participated in the survey, and who answered the questions were determined. The results obtained were entered into the model, and then were

compared with grades from the basic design course, and finally a preliminary assessment was made.

In Step 3; The Bloom's Taxonomy and Item Analysis were conducted. The dependent and independent variables and the relationship between variables were determined. Finally, the results were interpreted and evaluated.

3.1. Study Area

The study focuses on the planning and design education in an Anonymous University Department of URP. According to the definitions at the department web site, the main aim of SBP 100 - Basic Design Studio can be summarized as "creating concepts related to design, composition, and perception; spatial concepts and terms, the relationship between space and experience; and design work by means of visual, written and verbal representation techniques" (Figure 4). The basic design studio, which has approximately 70 URP students each semester, is generally conducted by two instructors from department of URP, one instructor from the department of Art Education and 1-2 instructor(s) from the department of Industrial Design and aims to provide an interdisciplinary perspective to the students.

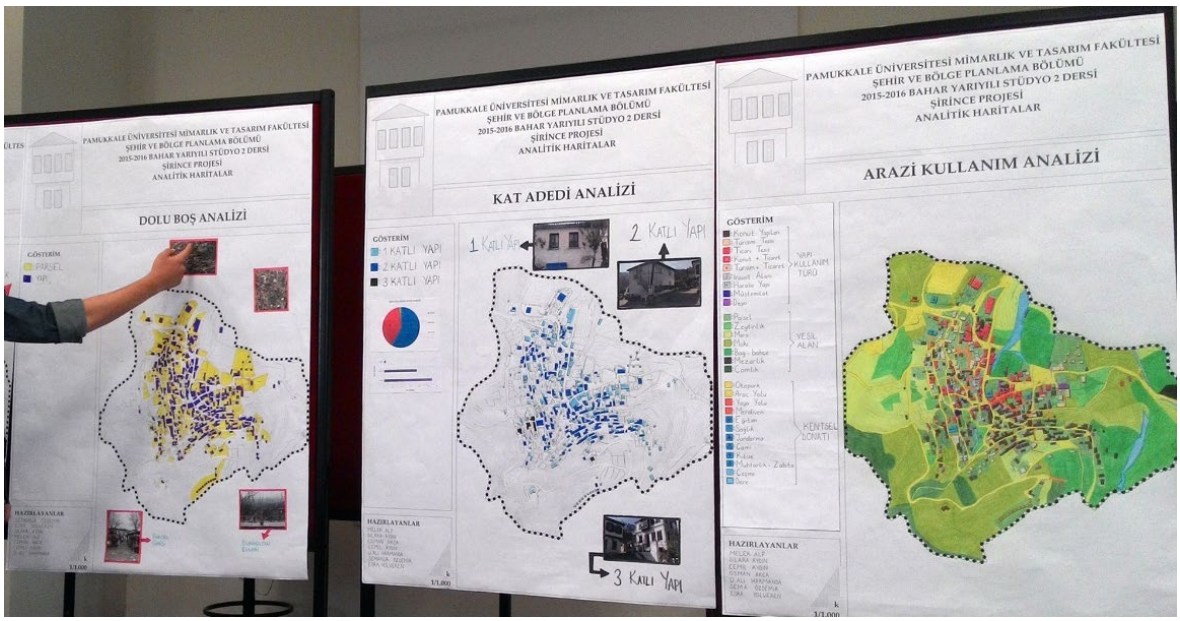


Figure 4 Studio 1 and Studio 2 presentations (Anonymous University, 2017)

It is determined that SBP 100 - Basic Design Studio directly relates to four courses in the URP Department in terms of scale and the layout plan: SBP 150 - Historical Environment Design; SBP 251 - 1/1000 scaled Implementary Development Plan; SBP 252 – Urban Design; and SBP 451 - 1/1000 scaled Implementary Development Plan (Table 2). The third-year courses are not included in the study as they are regional strategic planning-based, not design-based.

Table 2 Basic Design and Related Courses in Anonymous University URP

Semester	1st Year	2nd Year	3rd Year	4th Year
Fall	**SBP100 Basic Design**	-	-	-
Spring	SBP150 Historical Environment Design	SBP251 Planning Studio SBP252 Urban Design	-	SBP451 Planning Studio

3.2. Measurement Tools Currently Applied and Developed

Measurement and evaluation in education provide fundamental information about the level of realization of learning outcomes; therefore, they have a significant role in the identification of deficiencies and the assessment of the future course structure. The measurement and evaluation process of basic design education is carried out through an observational jury system, as is the

tradition in architecture and design education faculties, and the works subject to evaluation are commonly the visual design applications.

Undoubtedly, visual design applications of the learning process also have an informational dimension, but their affective and skill-based (psychomotor) dimensions come to the fore in student works. Learning is a holistic phenomenon that covers all these dimensions.

3.2.1. Evaluation of Skills-Based Basic Design Course Practices

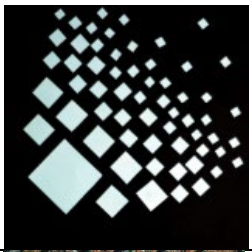
In basic design courses, the studies are evaluated by a jury, approximately 3 times throughout the semester of 14 weeks. The products are then scored based on their development process. Passing or failing is determined by the average score awarded for each student. In this study, the average score is used to represent the psychomotor learning domain of the comparative analysis.

3.2.2. Achievement Test Development for Basic Design Course

The development of a scale concerning the cognitive learning domain, or the preparation of the knowledge-achievement tests consists of many stages such as determining the content and validity and performing a reliability analysis. Accordingly, the content of the basic design education has been determined at the context-output learning level.

Firstly, a question-pool containing items about design elements, principles, Gestalt visual perception theory, form perception, abstraction and some other elements were put together by the instructors and taking into consideration the applications performed by the students. Secondly, two field experts were consulted for content validity, and 37 items in multiple choice survey form included in the trial test prevailed. According to the gradual classification of the objectives in education, known as Bloom's Taxonomy (BT) (Yurdabakan, 2012; Krathwohl, 2002), the selected items could test the levels of knowledge (recall), comprehension (understanding) and application analysis. The sampling in Table 3 was created according to BT out of the items in the test.

Table 3 Item Samples from the Basic Design Knowledge Test (BDKT)

Num.	Items	Bloom's Taxonomy
1	Which of the following is the institution that principally approached basic design education in the last century? A. De stijl B. Bauhaus School *(Correct)* C. Die Brücke D. Dada E. Der Blaue Reite	Knowledge (recall) level
2	Using contrasting colors in a composition is expressed as complementary color harmony. Accordingly, which of the following cannot be said to be true? A. They increase each other's value, they look more alive. B. They reduce each other's effects and vitality. *(Correct)* C. Green-red is a suitable example. D. One of the colors is cold and the other is warm. E. They are located directly opposite each other on the color wheel.	Understanding level
3	 Which of the following basic design principles cannot be said to apply to the arrangement (comp.) On the left? A. Unity / sovereignty B. Hierarchy C. Emphasis D. Orientation E. Symmetry (Correct) *(Image: Student Work)*	Application and analysis levels
4	 The urban texture in this visual was created by considering which design principle? A. Hierarchy B. Orientation C. Space / Occupancy D. Ratio / proportion E. Repetition *(Correct)* *(Image: Barcelona City, Royalty Free, Anonymous)*	Analysis

Item Analysis

193 graduated students responded to the BDKT scale. This number could be considered sufficient for educational research according to the scale development literature (Ozcelik, 1997). Item difficulty index assessment is given in Table 4.

Table 4 Item Difficulty Index Assessment

Item Difficulty Index (Pj)	Value / Meaning
0.00 - 0.20	Very hard
0.21 - 0.40	Hard
0.40 - 0.60	Moderate
0.61 - 0.80	Easy
0.81 - 1.00	Very easy

The discrimination index is the degree that distinguishes the answers of the upper group from the lower group according to the level of success. Item discrimination index assessment is given in Table 5.

Table 5 Item Discrimination Index Assessment

Item Discrimination Index (*rj*)	Value / Meaning
0.40 and above	Very good
0.30 - 0.39	Good
0.20 - 0.29	Can be improved
0.19 and smaller	Very weak – Must be removed

It is seen that even though the difficulty indices of 12 items were at an acceptable level, they were excluded from the scale because their discrimination indices were mostly very poor (r <0.20). Items that could be improved were reviewed. In this case, 25 items were deemed suitable for the application scale in terms of item difficulty and discrimination analysis. Based on this research, the main goal in the development of BDKT is to have relational analyses that will provide descriptive data about the sample group in question. Since the test results will not be considered as exam success, there is also no distractor analysis.

Basic Design Knowledge Test (BDKT) Reliability Analysis

Another method that can be used to prove the reliability of BDKT following item analysis is finding the Cronbach's Alpha (α) reliability coefficient. Cronbach's Alpha, which is a statistical technique, takes values between 0 and 1. The closer the value is to 1, the higher the reliability (Can, 2019). The value of α = 0.641 can be calculated in the trial scale applied to 193 graduated students. After removing items with low discrimination, the reliability coefficient (α) increased to 0.684. This shows that the developed BDKT is within a reliable range. Following this stage, BDKT can be applied to the relevant groups.

When BDKT is applied to 44 students who have taken a basic design course and are still studying in senior classes, it is deduced that the item difficulty (Pj) index has increased, that is; these students solved the test more easily than students who graduated in the past. This result is expected because they have just recently taken the course. On the other hand, the relatively low Cronbach's Alpha (α) value can be explained by the low number of participants (N) answering the test.

Table 6 Basic Design Knowledge Test (BDKT) Reliability Analysis

Stage	Number of Items	N	Cover. Difficulty (Pj)	Cover. Discrimination (rj)	Cronbach's Alpha Reliability Coefficient
1. TTBT Trial Scale	37	193	0.57	0.29	0.641
* Substance reduced	25	193	0.64	0.36	0.684
2. TTBT Application Scale	25	44	0.75	0.29	0.619

3.2.3. Attitude Scale Development for Basic Design Course

In Table 7, the factor loads, mean scores and standard deviation values of the items are shown in order from the largest to the smallest according to factor loads. The result of the factor analysis

shows that the attitude scale is a one-dimensional scale. While considering the items independently, sub-dimensions related to emotional and cognitive learning were determined in terms of meaning.

Table 7 Factor Load, Mean and Standard Deviation Values of the Selected Items for the Basic Design Course Attitude Scale

Item Number	Items	Factor Extraction	Mean	Sd
3	I like to be in basic design course.	,841	4,15	,6313
5	I never want to miss a basic design class.	,833	3,97	,7742
13	In my spare time I would like to deal with basic design.	,813	3,50	1,0055
23	The language of visual design is learned in the basic design course.	,810	4,43	,5012
2	Basic design course is one of my favorite courses.	,803	4,09	,7249
16	Basic design course prepares students for planning and design courses in upper grades.	,798	4,59	,5803
25	aesthetic value awareness develops in basic design course	,782	4,56	,5437
14	Basic design course is boring. (scored by inverting)	,782	4,17	,6767
15	I notice that my visual perception improves in the basic design course.	,776	4,67	,4740
6	I look forward to the time when I will take the basic design class.	,720	3,39	,8813
17	I realized that my abstraction skills improved in the basic design course.	,710	4,54	,5459
1	Basic design class is enjoyable.	,705	4,26	,5748
8	I follow the basic design course with interest.	,687	4,11	,7667
24	I take the basic design course because it is compulsory. scored by inverting)	,682	4,09	,7550
20	I use what I learned in the basic design course in my professional life.	,681	3,89	,8492
19	I care about criticism of my basic design course work.	,665	4,17	,5697
18	Time doesn't go by in basic design class. (scored by inverting)	,644	4,00	,8692
9	Even if it's not a basic design course. (scored by inverting)	,641	4,60	,5365
11	I willingly study the basic design course.	,609	4,11	,6742
7	it is important to learn basic design	,600	4,70	,4652

Independent Findings and Comments Obtained During the Development of the Attitude Scale

It can be said that the emotional sub-dimension in attitude is related to interest (curiosity), attention, communication, spending quality time, being able to criticize, and overall satisfaction level.

Relational / Regression Analysis Findings Between Variables

The grades of three studios and one theoretical applied course, and the score of the graduates in the applied online survey are given comparatively. The online survey was applied to 36 students that consist of almost all graduated students. The number of 36 is higher than 29 proves that it is valid in terms of “central limit theorem”. The comparison of survey scores and course grades are given in Table 8.

Table 8 Comparison of Survey Score and Course Grades

Students	**Knowledge testing score *(Y1)***	**Basic Design *Grade (Y2)***	**Attitude Scores for Basic Design *(Y3)***	**SBP 151** *Grade (X1)*	**SBP 251** *Grade (X2)*	**SBP 252** *Grade (X3)*	**SBP 451** *Grade (X4)*
1	**68**	**71**	**70**	64	57	68	60
2	**80**	**80**	**88**	88	68	69	77
3	**68**	**76**	**82**	83	55	63	70
4	**92**	**79**	**85**	78	71	75	59
5	**68**	**76**	**87**	74	68	83	64
6	**92**	**75**	**84**	65	56	63	62
7	**76**	**70**	**74**	70	71	80	61
8	**76**	**60**	**85**	75	74	93	77
9	**76**	**76**	**74**	67	63	61	65
10	**80**	**71**	**88**	73	67	72	71
11	**88**	**77**	**84**	72	85	65	67
12	**96**	**74**	**81**	83	74	83	75

13	**84**	**83**	**89**	80	73	83	65
14	**76**	**85**	**99**	74	71	85	64
15	**92**	**71**	**84**	71	60	75	66
16	**88**	**84**	**96**	77	88	74	67
17	**72**	**66**	**87**	63	62	70	62
18	**84**	**70**	**76**	64	68	65	45
19	**92**	**68**	**57**	70	68	66	56
20	**52**	**69**	**80**	62	50	76	60
21	**80**	**100**	**86**	90	90	93	85
22	**72**	**74**	**94**	62	67	63	62
23	**72**	**69**	**83**	75	67	85	65
24	**60**	**73**	**83**	90	86	91	85
25	**84**	**68**	**75**	64	65	16	46
26	**56**	**78**	**90**	66	57	85	60
27	**80**	**72**	**84**	68	72	82	42
28	**80**	**73**	**81**	62	71	76	63
29	**80**	**69**	**65**	67	48	60	53
30	**76**	**92**	**83**	73	85	85	65
31	**64**	**81**	**96**	89	68	69	74
32	**80**	**80**	**99**	65	72	70	77
33	**80**	**84**	**95**	74	87	56	77
34	**56**	**78**	**81**	71	64	73	61
35	**72**	**67**	**75**	63	53	76	70
36	**88**	**83**	**78**	73	83	88	67

Evaluation of Multiple Linear Regression Model Data

The relationship between the score obtained in the test and the grades of the students in the courses has been investigated by multiple linear regression analysis. According to the model, the knowledge testing score, Basic Design course grades and Attitude Scores for Basic Design are defined as dependent variables (Y1, Y2 and Y3), while SBP 151 course (X1), SBP 251 course grades (X2), SBP 252 course grades (X3) and SBP 451 course grades (X4) are independent variables. The linear regression model results are given in Table 9-10.

Table 9 Multiple Linear Regression Model Results (for Y1=Knowledge Testing)

Regression Statistics		***Variables***	***Parameters***	***Standard Error***	***t Stat***	***P-value***
Multiple *R*	0.99	**Intersection**	0.00	#NONE	#NONE	#NONE
R²	0.98	***X1***	0.68	0.32	2.15	0.04
Adjust *R²*	0.94	***X2***	0.63	0.23	2.72	0.01
Standard Error	12.95	***X3***	-0.07	0.17	-0.42	0.68
Observation	36.00	***X4***	-0.17	0.30	-0.55	0.59

Table 10 Multiple Linear Regression Model Results (for Y2=Basic Design Course)

Regression Statistics		***Variables***	***Parameters***	***Standard Error***	***t Stat***	***P-value***
Multiple *R*	0.99	**Intersection**	0.00	#NONE	#NONE	#NONE
R²	0.99	***X1***	0.54	0.18	2.93	0.006
Adjust *R²*	0.96	***X2***	0.40	0.13	2.99	0.005
Standard Error	7.55	***X3***	0.06	0.10	0.62	0.54
Observation	36.00	***X4***	0.06	0.17	0.33	0.74

Table 11 Multiple Linear Regression Model Results (for Y3= Attitude Scores for Basic Design)

Regression Statistics		*Variables*	*Parameters*	*Standard Error*	*t Stat*	*P-value*
Multiple *R*	0.99	**Intersection**	0.00	#NONE	#NONE	#NONE
R²	0.99	***X1***	0.48	0.19	2.50	0.02
Adjust *R²*	0.96	***X2***	0.44	0.14	3.17	0.00
Standard Error	7.80	***X3***	0.12	0.10	1.15	0.26
Observation	36.00	***X4***	0.08	0.18	0.43	0.67

When we evaluate the tables, it is determined that the R2 value is higher than 0.95. The R2 value of 0.98-0.99 indicates that the reliability/significance of the model is high. Furthermore, when (t) values are observed, it is revealed that X1 and X2 values are positively correlated with Y variables. In this case, it was observed that students with higher Basic Design perception, which were determined with the survey for graduate students, were successful in SBP 151 and SBP 251 courses. However, students did not achieve the same success in SBP 252 and SBP 451 courses in the following period.

The reasons why the SBP 151 course interacted positively with students with higher basic design perception could be due to the continuation of the basic design course in the same studio with the same instructors. Design expectations are strong as the course includes the Layout Survey. The SBP 251 - Studio 2 is the course where students first meet with Implementary Development Plans and at this stage, the theoretical load of the course is not heavy, but the design aspect is strong. For this reason, it makes sense that this course still has strong connections to basic design. With the increasing course loads and theoretical knowledge intensity and the development curriculum legislation getting ahead of the design, the relationship could not be detected in the other studio courses. In the SBP 252 - Urban Design, it is a possibility that the students could not spare enough time and effort for this applied course, which they took in parallel with their studio.

As time passes, it is observed that the relationship between the applied courses in the mental field and the basic design perception of the available information weakens. In the long run, especially after the fourth semester; it can be interpreted that students could not establish the relationship between basic design and planning studio due to two-dimensional plans and/or reasons such as course loads.

While establishing the multiple linear regression model, using the basic design course grades students received at the first year as the dependent variable may provide the same level of representation. However, due to the risk of ignoring the students' basic design knowledge in the senior years, the individuality of the students and other time-dependent differences, the study was used to measure the current knowledge. On the other hand, the basic design grades were arranged as dependent variables and repeated once again. Thus, by comparing the model results, it was investigated whether the grades given in the basic design studio would really represent the knowledge level and design abilities of the students.

When the results are examined (Table 11), it has been determined that the R2 value of the model is quite reliable with values above 0.99. When the significance of the T values is examined, it is seen that the 1st and 2nd values are significant, while the 3rd and 4th independent variable values are insignificant.

At this point, it was determined that "planning courses", which had significant correlation values with attitude scores, were also significant in the other two models (e.g., basic design notes and basic design questionnaire). This situation reveals that students' satisfaction, feelings, beliefs, and behaviors are also related to their success in planning courses.

In other words, success levels in design-based courses such as SBP151 (Studio 2) and SBP251 (Studio 4) are related to students' affective attitudes. It is understood that students with high affective attitudes are successful in these two courses or students with low affective attitudes are unsuccessful in these two courses.

4. Conclusion

In this study, the Anonymous University, Department of URP was examined as a case study to measure students' basic design levels and achievements in planning and urban design-based courses by dependent variables. Evaluations measure only one skill area; therefore, a knowledge-achievement test on the cognitive domain and an attitude scale on the affective domain were created. Student works were also evaluated as a psycho-motor measurement tool. These three-domain data was analyzed comparatively.

It is observed that there is a strong relation between adequate design thinking and achievement in URP education. The courses that have a strong bond with basic design education are SBP 151 and SBP 251. However, the bond weakens when it comes to SBP 252 and SBP 451. This situation may be explained with reference to time. In the long run, students tend to forget their basic design perception due to focusing on the theoretical and curricular parts of the education. Yet, this is not valid for SBP 251 as this course is directly linked to basic design perceptions. Thus, the irrelevance between the scores and course grades might be explained by the intensive course load of the students and the parallel studio courses, as well as the different technical requirements, norms and standards in the urban planning and design process.

The model established in the study measures the connection of students' basic design levels and abilities with applied design-based courses in the future. The investigation has focused on how the benefits of the students' success in the design process have changed depending on the time that has passed, in addition to what results they have created and in which fields.

The results of the tests made for the graduates of URP have determined how effective the students who still dominate the basic design processes are in design-based studio courses. Furthermore, based on the results obtained, the courses in which basic design techniques, principles and practices should be improved were determined. As an outcome of investigating the effects of basic design knowledge on applied studio courses, measures should be implemented to strengthen the link between basic design and planning, which otherwise weakens within the mental fields of the students over time. Students' perspectives and interpretation techniques should be kept strong by focusing on the applications related to basic design principles and abstraction techniques in applied studio courses. Furthermore, it is necessary to review the contents of courses, such as urban design to strengthen their connection with basic design practices and to increase homework or in-class applications that will allow students to relate with the design principles and abstraction techniques.

When the model results were compared, it was seen that the significance of independent variables were both the same, where the test results were accepted as the dependent variable and basic design grades were accepted as the dependent variable. It was observed that the model validity results, and the significance levels of the independent variables were also close. This has shown that the basic design studio grades represent the students' level of knowledge, the design education they receive is important for their success in future design-based courses, and this comparison can only be made using the basic design studio grades.

It is understood that the beliefs, thoughts, attitudes, opinions, and views generated by the students regarding the necessity, importance and impact of the basic design course are not completely related to the success levels in all the design-based courses. This result is thought to be related to the fact that the students who participated in the affective survey are graduates today, and therefore, their views and perspectives on basic design may have probably changed. Today, students are more likely to believe in the requirements of basic design courses as graduate city planners. It is highly probable that the affective attitudes of the students during the period they took the courses have changed.

Interdisciplinary studies at the basic design level in planning education can be seen as an école continuity (Gunay, 2007) since the architecture education started before planning education in Turkey and many planning departments were formed by separating from the architecture

departments. It is thought that basic design education increases the understanding of different scales and success in the third dimension and urban design scale; yet this situation may also result in the lack of emphasis on some contemporary concepts of planning in the current planning education.

However, it can also be said that when planning is separated from design education, it turns into a profession more focused on strategy formulation, and thus becomes distant from other disciplines that produce urban space such as architecture and landscape architecture. In this context, it is necessary to focus on the design education of planning students to carry out interdisciplinary studies, especially at the scale of urban design.

The application of the model in URP departments will identify the spots where the relationship with basic design is not maintained in the design-based courses and can guide to establish a more effective system. This model may provide a better understanding of the content of the studios. Improving the content of the studio courses will be an important basis for decision makers.

However, the COVID-19 pandemic has forced the universities towards online/hybrid courses, which inevitably affected the applied design education that certainly needs face-to-face training. Yet, there can be various advantages of online education as well, such as interaction with other planning schools and/or collective online juries.

In future studies, it is considered that the implementation of this measurement tool to other planning schools for further comparative analysis is necessary to improve the quality of planning education. In addition, several measurement methods such as panels, colloquiums, surveys, and questionnaires can be applied to students during their education and encouragement to off-school education forms such as UCTEA Chamber of City Planners' student commissions, summer student camps and online classes (e.g., Urbanism School on YouTube) can be proposed for better results.

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Resume

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Analysis of the facade and spatial quality of educational buildings of the first national architecture period: The case of Konya

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Abstract

In the last years of the 19th century, architects who were under the influence of the nationalist ideas that developed in the last years of the 19th century and were strengthened with the declaration of the constitutional monarchy, led to the emergence of the First National Architectural Period as a reaction. They also considered this period as an eclectic architectural style in which they reinterpreted the facade, plan and ornamental elements of Ottoman and Seljuk architecture with Western construction techniques. In this architectural process, many public buildings, hotels, bank buildings, ministry buildings, educational buildings and residences were built. Educational buildings are an important group among the new types of buildings constructed in Konya, which has maintained its political and cultural importance throughout history. In this study, the facade and spatial quality analyses of the Sanayi Mektebi, Male Teachers' High School (Dârü-l Muallimin), Girl Teachers' School (Dârü-l Muallimat) and Gazi Mustafa Kemal, Hakimiyet-i Milliye and İsmet Paşa Primary Schools, which are among the educational buildings built during the First National Architectural Period and which contributed to the identity of the city of Konya, were examined. The authenticity and conservation values of the selected educational buildings were determined and compared with each other. According to the results obtained from the facade and spatial analyses of these samples; authenticity values are determined depending on the rate of having the characteristics of the period and conservation criteria. The fact that no previous study has been carried out in this period and group of buildings using the method defined increases the originality value of the subject.

Keywords: educational buildings, facade quality analysis, I. national architecture period, Konya, spatial quality analysis

1. Introduction

Turkish architecture, which developed systematically and regularly from the Seljuks, reached its strongest expression in the 16th century and then gradually began to lose its identity with the periods of stagnation and decline of the Ottoman Empire. The empire exhibited some arrangements in order to get rid of falling behind the western states (Hasol, 2017). However, the Union and Progress Party was established after the declaration of the Constitutional Monarchy II in the empire that entered the period of collapse. In this community, instead of a common religion with a nationalist perspective, a common historical, cultural and linguistic heritage was defended and the formation of a common architectural style was supported (Alpagut, 2005; Yaldız & Parlak, 2018). As a result of these studies, the I. National Architecture Period emerged.

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The I. National Architecture Period draws attention as a process in which the first serious reactions to the westernisation tendency in the last period of the Ottoman Empire emerged, and efforts were made to purify architecture from foreign influences and foreign architects. It is important to understand that under the influence of nationalist ideas, architects used the facade, plan and ornamental elements of Turkish-Ottoman architecture in the buildings constructed during this period. The period, which began with the proclamation of the Second Constitutional Monarchy in 1908 and continued until the 1930s, did not lose its influence with the establishment of the Republic and expanded its areas of application within the newly established state. At that time, the movement was called National Architecture, National Architectural Renaissance, National Architectural Style or Neoclassical Style; today it is called National Architecture, National Architecture, Turkish Neoclassicism and Ottoman Neoclassicism (Sözen, 1984).

The architects who worked during the first period of National Architecture, especially Kemalettin and Vedat Bey, Muzaffer Bey, Arif Hikmet Koyunoğlu, Ahmet Kemal, Tahsin Sermet, Ali Talat, Falih Ülkü, Hafi, Necmeddin Emre and the Italian Giulio Mongeri also produced important works in this style.

Many public buildings, hotels, bank buildings, ministry buildings, educational buildings and residences were built during the First National Architecture Period. In Konya, which is located in the centre of Central Anatolia, was the capital of the Seljuks and was inhabited in all periods, there is no intensive construction activity in the early years of the Ottoman Empire. However, since the second half of the 19th century, educational buildings constitute a large part of the buildings serving the renewal movements (Öner, 2016).

In this study, the authenticity, the degree of preservation and the architectural characteristics of the period of the high-quality educational buildings selected from the city centre of Konya were determined by studying the facade and spatial characteristics of the educational buildings of the First National Architectural Period. At the same time, the schools were compared with each other. In this selected period and group of buildings, no previous study has been carried out with the determined method, which is important for the evaluation of the period. The fact that such a study has been carried out increases the originality of the study.

2. Material and Method

The aim of this study is to determine the architectural characteristics of the educational buildings constructed during the First National Architectural Period and to evaluate their characteristics in terms of their authenticity value within the period. For this reason, the architectural features of the educational buildings constructed in the First National Architectural Period have been analysed and it has been shown to what extent the selected educational buildings in Konya have these features with different values and whether they can preserve their authenticity today.

Sanayi Mektebi, Male Teachers' High School, Girl Teachers' School, Gazi Mustafa Kemal, Hakimiyet-i Milliye and İsmet Paşa Primary Schools, which were built as high schools in Konya during the First National Architectural Period, were selected for the study. The selection of these high representative buildings as samples was influenced by the fact that they were built in the years when the First National Architectural Period was adopted, they have the characteristics of the period, their stylistic similarities and they are all educational buildings.

While all the selected samples were evaluated by facade quality analysis, the primary schools were evaluated by spatial quality analysis together with the high school buildings under the common title, since their interior features and planning approaches were the same. During the analysis, information and documents related to the subject were searched through literature review, drawings, historical and current photographs of the buildings were examined in detail. The images and drawings were analysed and compared with the theoretical knowledge.

The data obtained from the field study were evaluated with a scoring systematic. This method is derived from the method proposed by İpekoğlu (2006) for the evaluation of the architectural features of traditional houses in her study. Facade and spatial analysis criteria were created within the framework of the general architectural features of the educational buildings of the I. National Architecture Period. Among these features, the originality value of each of the determinants of the period was accepted as 3 points, and the others were evaluated as 2 or 1 point according to their condition in the building. Whether the determined criteria are within the six selected samples and the authenticity value of these criteria within the period (3,2,1 points) were calculated by scoring. While creating the evaluation formula, the criteria were summed within their own categories, and the factor obtained was taken as a multiplier since the impact value of the factor obtained was high on the structure. Thus, with the score obtained, the degree to which the buildings carry these features, their originality value within their own period and their comparison with each other were made.

3. Architectural Characteristics of The Educational Buildings of The First National Architectural Period

The First National Architectural Period, which covers a short period of our architectural history (1908-1930), attempted to find the original in the field of architecture in the first years of the establishment of the Republic of Turkey. The First National Architectural Period is defined as an eclectic architectural style in which the plan, facade and ornamental elements (arches, motifs, ornaments, etc.) of Seljuk and Ottoman buildings were reinterpreted with Western construction techniques under the influence of nationalist ideas. This architectural style shows an attitude that combines the eclecticism of the Neo-Baroque movement with the characteristics of Art Nouveau. The use of Ottoman and Seljuk motifs in most of the buildings, especially on the facades, supports the formation of a national consciousness (Yaldız & Parlak, 2018).

The educational buildings of the first national architectural period have the plan, facade and ornamental features of the movement in general; they resemble each other and other types of public buildings. Primary school buildings, in particular, are the most frequently constructed educational buildings among other public buildings in order to ensure the spread and development of the idea of the Republic. Although different designs were made, the type projects prepared by the Ministry of Education were constructed after 1926 due to the small number or absence of architects in all provinces (Kul, 2011; Koçak, 2019).

The architectural characteristics of the educational buildings of the first national architectural period are listed below:

- When examining the plan characteristics of educational structures, it can be observed that the majority are arranged in a symmetrical, rectangular or U-shaped layout. The horizontal circulation is designed in an I or U shape perpendicular to the symmetry axis, while the vertical circulation is designed perpendicular to the symmetry axis.
- Symmetry is generally observed in the design of the facades. The front facades of the buildings are accentuated with more ornaments and projections than the other facades. The floors are divided by horizontal mouldings.
- In order to emphasise the entrance in the buildings, the entrance is provided from the raised floor and the entrance axes on the upper floors are supported by building elements such as balconies, overhangs or domes (Parlak, 2018).
- The windows are treated with different arches on each floor and the facades are animated with arch types such as pointed, flattened and bursa.
- Tile panels, rosettes, cabaras, column capitals with diamonds or muqarnas belonging to Seljuk and Ottoman art are commonly found as ornamental elements in the window pediments and facade arrangement in this period (Sözen, 1984).

- Hipped roofs, Marseille tiles and wide eaves were used in the roofing system. The undersides of the wide eaves, which are supported by pillars, are decorated with geometric and floral patterns similar to the under eaves and ceiling decorations of old Turkish architecture.
- The balcony balustrades, which are often seen, are either simple masonry balustrades placed vertically or Ottoman marble netting with Seljuk patterns formed by the intertwining of geometric shapes.
- Entrances and corners are enlivened with domes to give the facades a monumental angle (Ertuğrul, 2007).
- The design of the buildings, which are usually located in a large garden, includes classrooms, administrative departments (principal's room, vice-principal's room, teacher's room), servants' rooms, storage rooms, wet rooms; in those that provide practical education, there are places such as workshops and laboratories.
- Most of the classrooms have a rectangular plan, while the administrative rooms are smaller than the classrooms with square or rectangular plans (Koçak, 2019).
- In educational buildings, interior decoration and decorative elements that are found in other public buildings are not very common. This situation has been caused by different users and financial shortcomings.
- There are no special construction techniques and materials in this period. Buildings of the period were constructed with brick or stone materials, masonry or reinforced concrete. Volta or beam-supported floor technique was used for flooring (Koçak, 2019).

4. Historical and Architectural Characteristics of Educational Buildings of The First National Architectural Period Selected from Konya Province

Konya was an important centre for Turkey in the Republican period, as well as in the Seljuk and Ottoman periods. For reasons such as its location at the centre of the transport network and rapid population growth, it has developed as a city with a single-centre and 'radial road system' plan (Parlak, 2018).

In 1923, with the proclamation of the Republic, innovations occurred in areas such as architecture, education, life and the economy. In particular, the reforms carried out in the last periods of the Ottoman Empire began in the military field and continued in education. The need for new educational institutions arising from the changes in the education system was met by schools built in accordance with the characteristics of the First National Architectural Period, which became the architectural trend of the period. This construction process, which continued with the establishment of the Republic, continued throughout Turkey.

In Konya, there are many educational buildings from the First National Architectural Period that were built between 1915 and 1929. The educational buildings of the period selected in the context of the study are located around Alaeddin, the old city centre, especially in residential areas. The locations of the analysed educational buildings in the city are shown in Figure 1.

Figure 1 Study area and selected educational buildings (schematised from Google Earth)

4.1. Sanayi Mektebi

Located in the Şems neighbourhood of the Karatay district, the building, which is an early application of the period in Konya, was completed in 1901 by the provincial engineer Şefik Bey during the reign of Governor Avlonyalı Ferit Pasha (Figure 2) (Fırat, 2005). At that time, it was planned to build an industrial complex called 'Sanâyihane' in the city and open a school to teach tailoring, shoemaking, saddlery, leatherwork, carpentry and blacksmithing. The architectural identity of the Sanayi Mektebi is shown in Table 1.

Table 1 Sanayi Mektebi Building Identity

Building Identity	
Name	*Konya Sanayi Mektebi*
Year of production	*1900-1901*
Type	*Education Structure*
Architect	*Provincial Engineer Şefik Bey*
Constructor (Banisi)	*Governor Avlonyalı Mehmet Ferit Pasha*
Location	*Konya / Karatay / Mevlâna Cad.*
Original function	*School of Art and Industry*
Present Function	*Provincial Police Headquarters Building (Public Building)*
Status	*Good*
Qualification	*Masonry technique, rubble stone and brick*

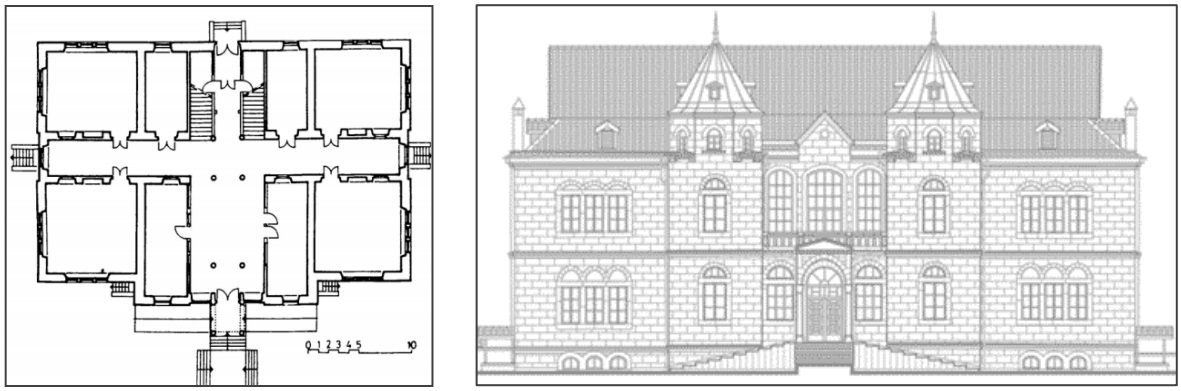
(a) **(b)**

Figure 2 a) Sanayi Mektebi in the early 20th century (Baykara, 2002) **b)** Sanayi Mektebi today (Tuna Sayın, 2021)

The building consists of a single rectangular block measuring 20.50m x 32.50m, which extends in an east-west direction. It has four storeys: basement, ground floor, first floor and attic. There is a symmetrical design in the plan scheme and facade views (Duran et al., 2006). The basement floor of the rectangular building consists of an east-west corridor and the rooms around it. Entrances to this floor are provided by a door located on the same axis in the middle of the two side facades and two doors on the side facades on the projections, independent of the other floors (Öner, 2016). The basement was used as a storeroom, dining room and boiler room (Fırat, 2005).

The ground floor layout is largely parallel to the basement layout. The narrow east-west corridor is interrupted by a steep corridor with a north-south entrance. Access to the upper floors is provided by a wide staircase facing north, opposite the main entrance (Figure 3a) (Öner, 2016). The spaces on this floor were used as classrooms, headmaster's rooms and teachers' rooms (Fırat, 2005). On the first floor, the square cells on the ground floor were expanded to form large rectangular volumes.

The main entrance to the building is a single porticoed entrance located in the centre of the south facade on a high rectangular platform accessed by a staircase. The portico is formed by column-like legs with pointed arches connecting them and a triangular pediment on the arch. On the first floor, a balcony was formed above the entrance portico by setting back the facade, and the balcony railings are made of stone (Figure 3b) (Fırat, 2005).



(a) **(b)**

Figure 3 a) Sanayi Mektebi ground floor plan (Sözen, 1984) **b)** Sanayi Mektebi entrance facade (Çağlar, 2018)

On either side of the entrance to the building there are tower-like projections that are square up to the top of the facade and become octagonal at the eaves. These projections end in a leaded pyramidal cone and are the most striking elements of the facade (Duran et al., 2006).

The east and west side facades are symmetrical to each other, while the north and south entrance facades are symmetrical to each other. On the north and south facades there are groups of three windows with arched pediments that open onto the corner rooms. These triple windows are juxtaposed and have pointed arches on the ground floor and flat arches on the upper floor. At the same time, the tile panels on the arch pediments are designed in a style reminiscent of 16th century Ottoman tiles, multi-coloured and glazed (Figure 4) (Fırat, 2005).

On all the facades of the building, the basement, ground floor and first floor are separated by a simple horizontal moulding. These eaves mouldings were not only used on the towers. The building is covered with a hipped roof of Marseille tiles, and long, thin chimneys were used in keeping with its characteristics. As for the building materials, rubble stone was used in the basement, joints were made on plaster in the upper floors and mouldings were arranged with brick inside and plaster outside to give the appearance of cut stone (Öner, 2016).

In the early years of the building's construction, the inscription on the triangular pediment of the entrance with portico and one of the inscriptions on the tiled pediment of the triple windows on the ground floor of the front facade were lost. The building was most severely damaged by a fire

in 1979, and its original plan was modified several times before and after the fire. The Sanayi Mektebi , which was used as a school for many years, is now used by the Provincial Police.

(a) **(b)**

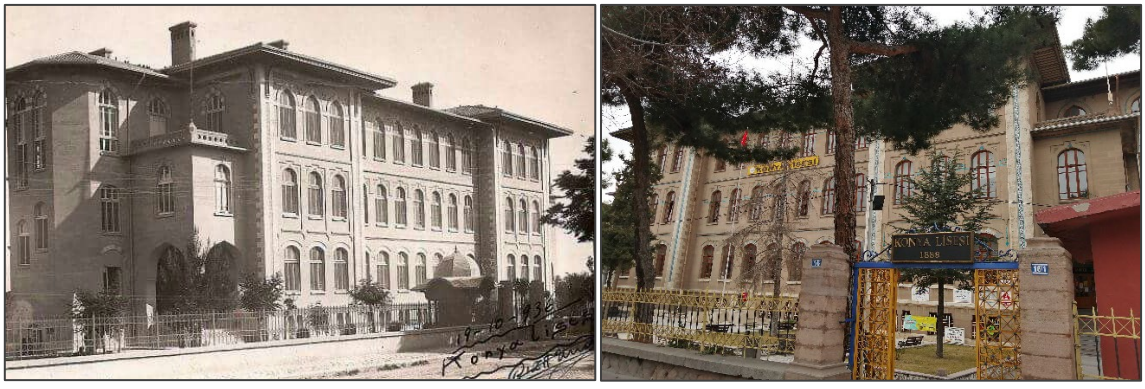
Figure 4 a) Triangular pediment on the entrance portico **b)** Decorations on the arch pediments of the windows (Tuna Sayın, 2021)

4.2. Male Teacher High School (Dârü-l Muallimin)

Located in the Meram district, the building was designed and constructed by the architect Muzaffer Bey between 1914 and 1917 (Figure 5). The building identity of the Male Teacher High School (Dârü-l Muallimin) is shown in Table 2.

Table 2 Male Teacher High School Building Identity

Building Identity	
Name	*Male Teacher High School (Dârü-l Muallimin)*
Year of production	*1914-1917*
Type	*Education Structure*
Architect	*Architect Muzaffer Bey*
Constructor (Banisi)	*Governor of Konya Hüsnü Bey*
Location	*Meram / Abdülaziz Mah. / Atatürk Cad.*
Original function	*Male Teacher High School*
Present Function	*Konya High School*
Status	*Good*
Qualification	*Sille and Gödene stone in masonry technique*



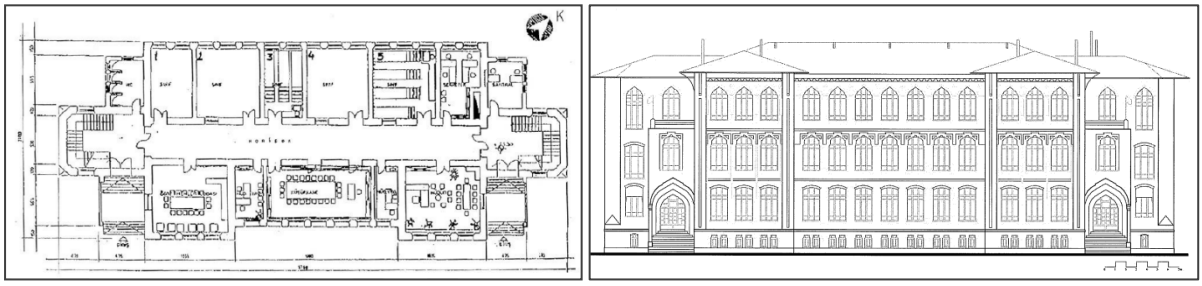
(a) **(b)**

Figure 5 a) Male Teacher High School-1936 (Konya Lisesi 1936 | Fotoğraf, Tarih, Eski evler, n.d.) **b)** Male Teacher High School today (Tuna Sayın, 2021)

The building consists of a single rectangular block measuring 21.8 m x 57.6 m, which is laid out longitudinally in a northeast-southwest direction within a rather large garden. It has a total of four floors, one of which has a basement (Çiftçi, 2001).

Inside the building, each floor consists of functional departments and classrooms arranged around a long corridor. The vertical circulation between the floors is provided by the staircases, which are symmetrically arranged in a northeast-southwest direction and project outwards. Although the internal organisation of the building was later modified, the basement floor consists of service rooms such as storage, dining room, pantry; the ground floor consists of five classrooms, library, teachers' room; the first floor consists of 10 classrooms and administrative rooms; and the second floor consists of a dormitory with seven sections in its original use. Floor heights vary on each floor (Figure 6a) (Duran et al., 2006).

The main entrances to the building are arranged as raised, single-volume portico units with stair buckets projecting to the northeast and southwest (Öner, 2016). The entrance portico on the ground floor is evaluated as a stone console on the first floor, and as a balcony with a stone balustrade on the second floor. At the same time, there is an Ottoman inscription on the entrance located at the eastern end. In general, it can be seen that a certain symmetry dominates in the layout and facade design of the building (Figure 6b).



(a) **(b)**

Figure 6 a) Male Teacher High School ground floor plan **b)** Male Teacher High School entrance facade (Sözen, 1984)

The facades use different arch forms typical of Turkish architecture, with flattened windows on the basement and ground floors, mirrored windows on the first floor and pointed tangent arched windows on the second floor. The tile decoration of the entrance facade, the shape of the arches, the stone ornaments and the ornamental motifs are based on the ornamental art of the 16th century Ottoman and Seljuk periods. The protruding parts are made of light-coloured Gödene stone, and a single row of tile borders is placed in these areas. Turquoise tile decorations are also found around the window arches as borders and cabriolets. Horizontal division on the facades is provided by mouldings on the ground floors. There is no ornamentation on the east and west elevations, or on the north elevation, except for floor mouldings and arches. The facade surface is completed with a single row of triangular muqarnas borders above and wooden ornaments with geometric motifs below the wide eaves (Figure 7) (Bozkurt, 2014).

The building was constructed using the masonry technique, with Sille and Gödene stone as the materials and lime mortar as the binding material. The upper part of the building is covered with a hipped roof, and Marseille tiles and projecting eaves are used on each facade (Duran et al., 2006). Dârü-l Muallimin, which has been used as an educational building for many years, continues its original function today and serves as the Konya Anatolian High School.

(a) (b)

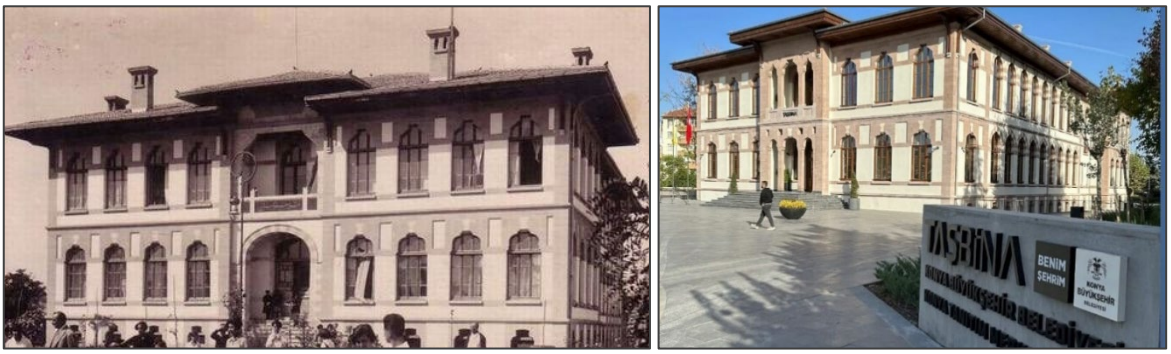
Figure 7 a) Decorations of the entrance facade of the Male Teacher's High School **b)** Column carrying the entrance portico (Tuna Sayın, 2021)

4.3. Girls' Teacher Training School (Dârü'l Muallimat)

Located on Ankara Street to the east of the Karatay Madrasah, the building was begun in 1917 by architect Muzaffer Bey and completed in 1924 after his death by architect Falih Ülkü (Figure 8).

Table 3 Girls' Teacher Training School Building Identity

Building Identity	
Name	*Girls' Teacher Training School (Dârü'l Muallimat)*
Year of production	*1917-1924*
Type	*Education Structure*
Archİtect	*Architect Muzaffer Bey/ Architect Falih Ülkü*
Constructor (Banisi)	*Governorship of Konya*
Location	*Karatay /Ankara Cad./ East of Karatay Madrasah*
Original function	*Girls' Teacher Training School*
Present Function	*Municipality-owned public building*
Status	*Good*
Qualification	*Sille and Gödene stone in masonry technique*



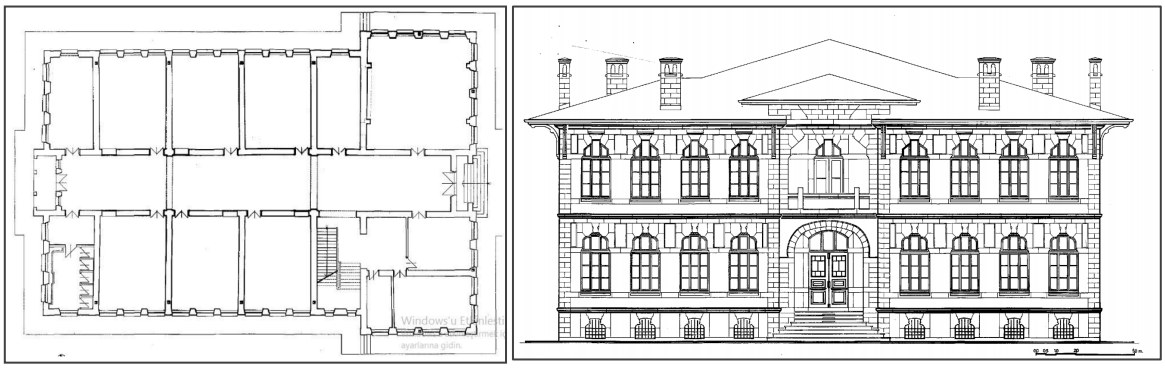
(a) (b)

Figure 8 a) Girls' Teacher Training School in the past (Kız öğretmen okulu | Tarihi evler, Fotoğraf, Bina, n.d.) **b)** Girls' Teacher Training School today (Tuna Sayın, 2021)

The building is set in a large garden and has a T-plan layout. The building, which consists of ground and first floors above the basement, was constructed with three storeys and a hipped roof. After the 1930s, reinforced concrete units were added to the west elevation to extend the building. The building has a symmetrical approach in terms of plan and facade layout (Duran et al., 2006).

The entrance to the building is provided by a raised staircase of nine steps located in the centre of the east facade, and the interior space is symmetrically divided in two by a corridor running east-west. Thus, on all three floors, rectangular rooms are arranged on either side of the corridor, with only minor differences. The basement consists of a dining room, kitchen, pantry, storage room around the corridor; classrooms and administrative rooms on the ground floor; library, classrooms and units with various functions on the first floor. Vertical circulation is provided by the stairwell in the south-east corner. There is also another staircase used for service purposes (Figure 9a) (Duran et al., 2006).

The entrance door, reached by the stairs, is located behind an iwan-like volume with a flat arch that is recessed inwards. There is also a balcony above the door with a small depth and a stone balustrade, which is also drawn inwards from the facade (Öner, 2016). At the ground floor level of the entrance facade, there is an entrance landing in the centre and Bursa-type window arches in groups of four on both sides. The side facades facing north and south have ogival arches on the ground floor and round horseshoe arches on the first floor. Horizontal division on the facades is provided by mouldings on the ground floor levels (Figure 9b) (Bozkurt, 2015).



(a) **(b)**

Figure 9 a) Girls' Teacher Training School ground floor plan (Kız öğretmen okulu | Tarihi evler, Fotoğraf, Bina, n.d.) **b)** Girls' Teacher Training School entrance facade (Sözen & Dülgerler, 1978)

While all of the building's facades have wide eaves, the eaves on the main entrance axis are kept higher and jut out to emphasise the entrance. Geometrically decorated eaves have not survived to the present day.

Looking at the arrangement of the facades in general, they are enlivened by floor mouldings, arched corners, plinths, consoles and eaves arrangements. There is no complete unity on the facades of the building. In accordance with the understanding of the period, it can be evaluated within the I. National Architecture. Dârü'l Muallimat, which was used as a school building for many years, is no longer used as a school building but as a public building belonging to the municipality.

4.4. Gazi Mustafa Kemal Primary School

It is believed that the building, located in the Karatay district, was built in 1926-1927 by Konya Governor İzzet Bey according to one of the type projects designed by the architect of the time, Mukbil Kemal Taş, for the German company Lenc (Leno) (Eroğlu, 2001). The building identity of Gazi Mustafa Kemal Primary School is shown in Table 4.

Table 4 Gazi Mustafa Kemal Primary School Building Identity

Building Identity	
Name	*Gazi Mustafa Kemal Primary School*
Year of production	*1926-1927*
Type	*Education Structure*
Architect	*Mukbil Kemal Taş/ German company-Lenc (Leno) Company*

Constructor (Banisi)	*Governor of Konya Mr. İzzet*
Location	*Next to Karatay/Alaeddin Hill*
Original function	*Primary School*
Present Function	*It is considered to be a public structure.*
Status	*Good*
Qualification	*Cut stone in masonry technique*

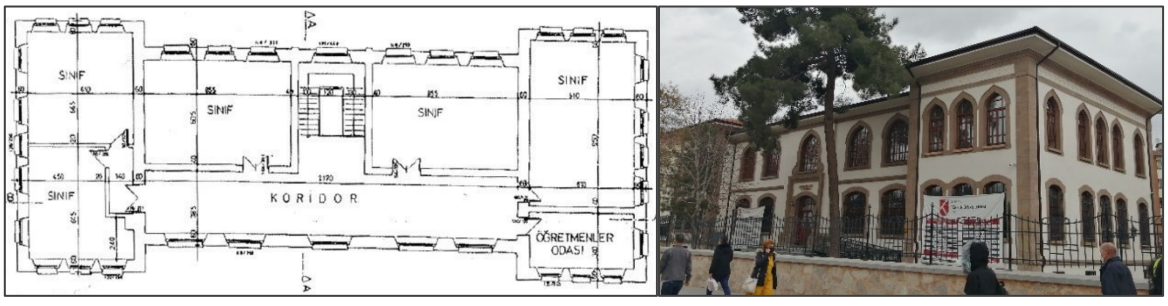
The symmetry axis of the building, which has a rectangular plan and type I corridor schemes, is designed on an east-west axis. The staircase, which provides vertical circulation in the building, is located on the axis of symmetry, directly opposite the main entrance. It consists of two entrances and stairs located in the centre of the building, a corridor extending perpendicular to them, and spaces arranged around the corridor (Yaldız & Parlak, 2017).

In its original state, the building consists of two floors above the basement, with storage and archive spaces in the basement and classrooms and administrative spaces on the ground and first floors (Figure 10a). The symmetry between floors, a characteristic of the period, is also seen in this building. The most striking feature of the interior is the embroidery of the Turkish flag that covers the ceiling of the central axis. At the same time, there is a fresh water fountain in the eastern part of the garden to meet the water needs of the students and the immediate neighbourhood.

The facades have features in common with the primary school buildings of the First Nationalist period, and each facade is identical and generally simple in design. The windows, which continue in the same order on all the facades, are grouped as flat arches on the basement floor, flat arches on the ground floor and pointed arches on the first floor. The horizontal division on the facades is provided by stone mouldings from the ground floors (Öner, 2016).

As it is a small volume educational building, there are no architectural features such as balconies or consoles. In addition, there are not many ornamental and decorative elements. Only rhombic borders were used at the entrance door on the west facade and at the tops of the overhanging sections at both ends of the building, under the eaves (Figure 10b) (Yaldız & Parlak, 2017).

The roof of the building is designed as a hipped roof with Marseille type tiles. In the building with wide eaves, the roof of the corner sections was raised in order to create a monumental appearance. In the building constructed with masonry construction technique, the walls are cut stone and the floors are reinforced concrete (Yaldız & Parlak, 2017). Although the interior of Gazi Mustafa Kemal Primary School has undergone changes that reflect the characteristics of the period, it has largely preserved its facade characteristics. Today, it continues to function as a public building belonging to the university rather than an educational building.



(a) **(b)**

Figure 10 a) Gazi Mustafa Kemal Primary School plan (Eroğlu, 2001) **b)** Gazi Mustafa Kemal Primary School (Tuna Sayın, 2021)

4.5. Hakimiyet-i Milliye Primary School

Located on Garaj Street in Karatay district, the building was constructed by the German company Lenc (Leno) Company within the scope of the project prepared by architect Mukbil Kemal Taş in

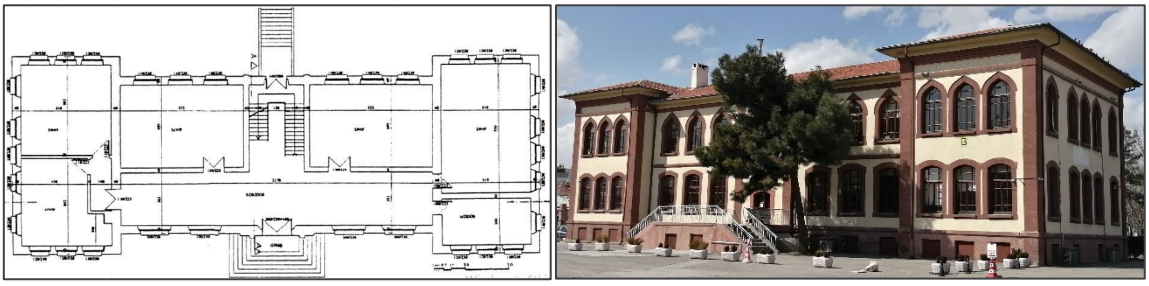
1926-1927 (Eroğlu, 2001). The building identity of Hakimiyet-i Milliye Primary School is shown in Table 5.

Table 5 Hakimiyet-i Milliye Primary School Building Identity

Building Identity	
Name	*Hakimiyet-i Milliye Primary School*
Year of production	*1926-1927*
Type	*Education Structure*
Architect	*Mukbil Kemal Taş/ German company-Lenc (Leno) Company*
Constructor (Banisi)	*Governor of Konya Mr. İzzet*
Location	*Near Karatay/Mevlâna Tomb*
Original function	*Primary School*
Present Function	*Provincial Directorate of National Education*
Status	*Good*
Qualification	*Cut stone in masonry technique*

The building, which has a rectangular layout, has the same layout and material features as Gazi Mustafa Kemal Primary School. There are two entrances on the central axis on the north and south sides of the building and a staircase on the entrance axis providing access to the other floors. In its original state, the building consists of two floors above the basement with storage and archive spaces in the basement and classrooms and administrative spaces on the ground and first floors (Figure 11a) (Öner, 2016).

With all its architectural elements, such as the symmetrical planning of the facade, the protruding corners on both sides of the volume, the wide eaves and the arrangement of the windows, it has features in common with other primary school buildings from this period. A simple understanding was adopted as the ornamentation of the building, and only the equilateral borders were wrapped under the eaves (Figure 11b) (Yaldız & Parlak, 2017). Today, the facade of the building, which serves as the Provincial Directorate of National Education, has not undergone any significant changes.



(a) **(b)**

Figure 11 a) Hakimiyet-i Milliye Primary School ground floor plan (Eroğlu, 2001) **b)** Today Hakimiyet-i Milliye Primary School (Tuna Sayın, 2021)

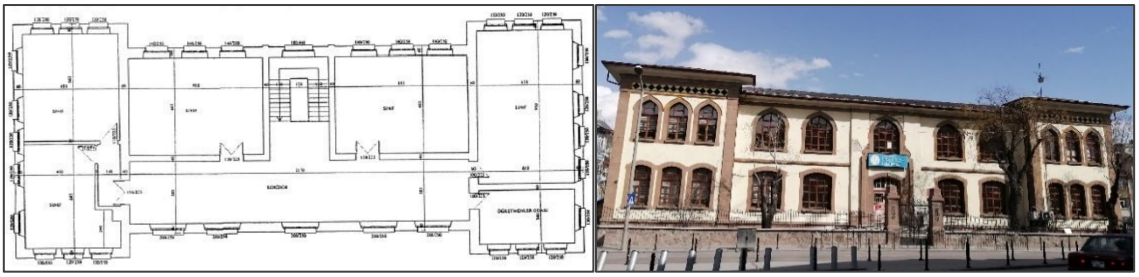
4.6. İsmet Paşa Primary School

İsmet Paşa Primary School, located on İstanbul Street in Karatay district, was built in 1926-1927 by the German company Lenc (Leno) Company, just like Gazi Mustafa Kemal Primary School and Hakimiyet-i Milliye Primary School (Eroğlu, 2001). The building identity of İsmet Paşa Primary School is shown in Table 6.

Table 6 İsmet Paşa Primary School Building Identity

Building Identity	
Name	*İsmet Paşa Primary Schools*
Year of production	*1926-1927*
Type	*Education Structure*
Architect	*Mukbil Kemal Taş/ German company-Lenc (Leno) Company*
Constructor (Banisi)	*Governor of Konya Mr. İzzet*
Location	*Near Karatay/Mevlâna Tomb*
Original function	*Primary School*
Present Function	*Primary School*
Status	*Good*
Qualification	*Cut stone in masonry technique*

The building, which has a rectangular plan extending in an east-west direction, was designed as two storeys above the basement. In its original state, storage and archive spaces are located in the basement, while classrooms and administrative spaces are located on the ground and first floors (Figure 12a) (Öner, 2016). The windows of the building, designed with period features, are grouped as flat arches on the basement floor, flat arches on the ground floor and pointed arches on the first floor. The overall architectural design of the building, which is symmetrical in both layout and facade arrangement, has the same features as Gazi Mustafa Kemal Primary School and Hakimiyet-i Milliye Schools. Among the primary school buildings surveyed, it differs from the others in terms of facade decoration in that the rhombic border reliefs between the raised roof and the windows on the corner axes are now painted in a different colour (Figure 12b). Although the interior of the building, which is still used as a primary school, has been completely altered, the original features of the facade have been retained.



(a) **(b)**

Figure 12 a) İsmet Paşa Primary School ground floor plan (Eroğlu, 2001) **b)** İsmet Paşa Primary School today (Tuna Sayın, 2021)

5. Field Study

In this section, the facade and spatial evaluation of the educational buildings of the First National Architectural Period selected from the city centre of Konya were carried out. Sanayi Mektebi, Male Teacher High School and Girl Teacher Training School high schools and Gazi Mustafa Kemal, Hakimiyet-i Milliye and İsmet Paşa primary schools were selected for the study. The facade quality analysis was carried out on the selected high school and primary school buildings, and the spatial quality analysis was carried out as a group due to the same interior characteristics of the high school and primary school buildings.

5.1. Facade Quality Analysis

The analysis of the quality of the facades of the selected educational buildings will ensure the holistic authenticity level of the buildings by analysing the conservation analysis, the facade elements and the physical condition. The aim is to determine the authenticity value of the facades

of the educational buildings of the first national architectural period within their own period and the extent to which they preserve their architectural facades. The characteristics of the selected buildings were grouped in a table (Table 7) and analysed comparatively. In the study, both the present-day facades and the original architectural facades of the educational buildings were analysed visually. During the assessments, the buildings were categorised as follows: holistic authenticity analysis, conservation analysis of facade features, analysis of facade elements and physical condition.

The Authenticity Analysis (AA) refers to the holistic condition of the architectural facades of the building and their change over time. Buildings that have retained the original value of the facade are awarded 3 points, buildings with little change in the original facade are awarded 2 points, and buildings with severe changes in the facade are awarded 1 point.

The Conservation Analysis (CA) refers to the degree to which the original character of the facade is preserved today. Repaired facades in good condition were awarded 3 points and those in need of repair were awarded 2 or 1 points depending on the degree of repair.

In the analysis of the Facade Elements (FE), all the criteria found in the educational buildings of the period have been grouped under the headings of facade elements, decoration, windows and entrances, as well as the facade elements they have, towers, wide eaves, long chimneys, roof and tile type and the symmetry of the facade. In the table, the features that are essential to the educational buildings of the period are highlighted in grey. The authenticity value of these features is given 3 points, while other features are given a coefficient of 2 or 1 points, depending on their importance. The total score was calculated on the basis of 19 main criteria.

The Physical Analysis (FA) was assessed on the basis of the building's suitability to the urban structure, its functional qualities, the suitability of any ancillary buildings, climatic comfort and perception, and was awarded 1, 2 or 3 points according to the degree of compliance with the criteria.

Facade Quality Assessment Score for analysing the facades of educational buildings and determining their original architectural values: ***(AA+CA) x (FE+FA)*** formula has been created. This formula is derived from the method proposed by İpekoğlu (2006) for the evaluation of the architectural features of traditional houses in her study. While forming the evaluation formula, the criteria were summed within their own categories and the factor obtained was taken as a multiplier since it has a high impact value on the structure. In calculating the total score, the holistic authenticity and the conservation coefficient of the building in the best condition are assumed to be 3 points each, and the 19 main criteria in the table are multiplied by 3 points.

As a result of the analysis, in order to compare the facade quality analysis between the selected educational buildings, the ratio of the evaluation score to the total score was calculated as a percentage and a comparison was made.

Table 7 Analysis of the Facade Quality of Selected Educational Buildings of the First Period of National Architecture in Konya

TOTAL	PERCENT			44%	91%	70%	51%	53%	44%
	Total Score			342	342	342	342	342	342
	Evaluation Score			152	312	240	174	180	150
Physical Analysis	Awareness			•	•	•	•	•	•
	Climatic comfort			•	•	•	•	•	•
	Suitability of the additional structure				•	•		•	
	Re-functionalisation			•		•	•	•	
	Continuity of original function				•				•
	Compatibility with the urban texture			•	•	•	•	•	•
Analysis of Facade Elements	Long thin chimneys			•	•	•			
	Hipped roof with Marseille tiles			•	•	•	•	•	•
	Mouldings separating floors			•	•	•	•	•	•
	Symmetric front facade			•	•	•	•	•	•
	Wide eaves				•	•	•	•	•
	Tower-like projections for monumental effect			•					
	Entry	Raised entrance				•	•	•	•
		Raised, columned (porticoed) entrance		•	•				
	Windows	Simple windows		•			•	•	•
		Arched windows			•	•	•	•	•
		Arched windows with tiled pediment decorations		•	•				
	Decorations on the facade	Ottoman inscription / Ottoman tughra coat of arms		•	•				
		Triangular pediment		•					
		Stone relief on arch keystones			•				
		Wooden geometric decorations under the eaves			•	•			
		Stone balcony railing		•		•			
		Ottoman / Seljuk motif stone balcony railing			•				
		Column with muqarnas capitals			•				
		Paint decorated motifs/ Stone engraved motifs				•	•	•	•
		Tile decorated motifs		•	•				
Conservation Analysis	The level of preservation of facade features			•	•	•	•	•	•
Authenticity Analysis	Holistic authenticity level of the building			•	•	•	•	•	•
Facade Quality Analysis				Sanayi Mektebi	Male Teacher High School (Dârü-l Muallimin)	Girls' Teacher Training School (Dârü'l Muallimat)	Gazi Mustafa Kemal Primary School	Hakimiyet-i Milliye Primary School	İsmet Paşa Primary School

Evaluation Formula = (AA+CA) x (FE+FA) Total Score: (3+3) x (19x3)= 342	
1	
2	
3	
authenticity value score	

According to the evaluation, the Male Teachers' High School (Dârü-l Muallimin) has a very good level compared to other educational buildings in terms of preserving the holistic authenticity of its facade, having a rich place in the diversification of facade elements reflecting the characteristics of the period and the physical analysis results it contains, and it was calculated as 91%. In addition, the building has undergone restoration work in order to preserve its original state. Compared to the other selected educational buildings, this educational building reflects the understanding of the I Nationalist architectural period the most.

The Girls' Teacher Training School (Dârü'l Muallimat) also scores 70% in terms of facade quality, thanks to its highly original facade elements and recent restoration. The building, which has changed many functions over the years, is ranked 2nd in terms of meeting the criteria of the period. It has been noted that the facade character of these boarding school buildings has the most original qualities of the period, but they can be differentiated within themselves.

The Sanayi Mektebi, one of the high school buildings, reflects the architecture of the First National Architectural Period with its facade elements and tile decorations, but this building, which continues to function as a public building, has survived to the present day with a 44% authenticity value and has preserved its facade quality less than the Male Teachers' High School, which has preserved its original function, due to the loss of facade elements.

Gazi Mustafa Kemal, Hakimiyet-i Milliye and İsmet Paşa Primary Schools have also preserved their original facades and retain the main features of the period in terms of facade character. However, since they do not reflect the rich ornamentation and decorative features as much as the other high schools, they have received values of 51%, 53% and 44% respectively, and it has been shown that they have a simpler understanding compared to the features of the period.

5.2. Spatial Quality Analysis

In the spatial quality analyses of the secondary schools of the educational buildings selected as a sample, authenticity analysis, plan status and plan elements were analysed. The aim was to understand the authenticity value of the interiors of the educational buildings of the I period within their own period. The selected buildings were classified and compared with each other using the table (Table 8), which was prepared taking into account the spatial characteristics and building materials. While evaluating the spatial quality, the preservation of the holistic original architecture of the buildings, the architectural planning showing the requirements of the period and the architecture of the educational institutions of the period were evaluated in terms of building components.

The Authenticity Analysis (AA) refers to the condition of the original spatial organisation of the building and its change over time. The authenticity score is given 3 points for buildings that have preserved their spatial components, 2 points for buildings with slight changes and 1 point for buildings with major changes.

Situational analysis of the plan type (PA), the schools were analysed according to the plan scheme of the period and the number of storeys. According to the characteristics of the I National Architecture Period, the plan scheme is generally expected to be symmetrical-rectangular and the number of storeys is expected to be 3 storeys. The evaluation was made on the basis of these characteristics and 3 points were awarded to buildings with these characteristics.

Analysis of plan elements (PE), the authenticity of educational buildings was measured according to the presence of balconies, classrooms, administrative departments, teachers' rooms, dining halls, dormitories, libraries, staircases, and building materials such as stone, brick, tile, and local materials commonly used in educational buildings of the I. National Architecture Period. In the evaluation, 1, 2 or 3 points were given according to the quality of the design element.

Spatial Quality Assessment Score for analysing the interiors of educational buildings and determining their original architectural values: ***AA x (PA+PE)*** formula has been created. This formula is derived from the method proposed by İpekoğlu (2006) for the evaluation of the architectural features of traditional houses in her study. While forming the evaluation formula, the criteria were summed within their own categories and the factor obtained was taken as a multiplier since it has a high impact value on the structure. In the calculation of the total score, the features that are indispensable in educational buildings of the period are highlighted in grey in the table. It is assumed that the holistic authenticity level of the building is the best and is worth 3 points; 19 main criteria in the table are multiplied by 3 points. As a result of the analysis, in order to compare

the spatial quality analysis between the selected educational buildings, the ratio of the evaluation score to the total score was calculated as a percentage and compared.

Table 8 Spatial Quality Analysis of Selected Educational Buildings of the First Period of National Architecture in Konya

		PERCENT	23%	65%	25%	42%	Evaluation Formula=AA x (PA+PE) Total Score: 3 x (19x3)= 171	
		Total Score	171	171	171	171		
		Evaluation Score	39	112	42	72		
Analysis of plan elements	Building Materials	Local materials (Sille and Gödene Stone)		*	*			
		Stone, Brick and Tile	*	*				
		Stone and Brick			*	*		
		Tile mosaic with original floral motifs		*		*		
		Original wooden ceiling cladding/ Turkish flag embroidery		*		*		
		Originality of the vertical circulation location	*	*	*	*		
		Service stairs			*			
		Stairs	*	*	*	*		
		Wet Area	*	*	*	*	1	
		Conference Hall	*					
		Library		*	*		2	
		Bed Dormitory		*				
		Service Spaces (kitchen, warehouse, cellar, etc.)		*	*			
		Dining Hall	*	*	*	*	3	
		Servant's room	*	*	*	*		
		Teachers' room	*	*	*	*		
		Administrative Department	*	*	*	*		
		Classrooms	*	*	*	*		
		Balcony	*	*	*			
		Columned portico	*	*				
		Stone console		*				
Situational analysis of the plan type	Number of Floors	Four floors	*	*				
		Three floors			*	*		
	Plan Diagram	Symmetric-T plan diagram			*			
		Symmetrical-rectangular plan diagram	*	*		*		
Authenticity Analysis		Holistic authenticity level of the building	*	*	*	*		
Spatial Quality Analysis			Sanayi Mektebi	Male Teacher High School (Dârü-l Muallimin)	Girls' Teacher Training School (Dârü'l Muallimat)	Primary School Buildings		authenticity value score

According to the results of the evaluation, the Male Teachers' High School (Dârü-l Muallimin) is the educational building that best reflects the spatial characteristics of the period, with an authenticity value of 65%. This is due to the fact that it contains different types of spaces, has not lost its original function, preserves the originality of the architectural understanding and plan elements of the period, and maintains the understanding of materials specific to the region.

Although the Girls' Teachers' Training School (Dârü'l Muallimat) contains most of the plan schemes and elements of the period, it has a 25% authenticity value because it has long served as a public building rather than for its own function and has been shaped according to the institution. The Sanayi Mektebi has the lowest authenticity value of 23%, due to the fact that the variety of elements is less than in the other educational buildings analysed. In addition, the fire at the Girls' Teachers' Training School and the Sanayi Mektebi also had an impact on the preservation of their original architectural features, and they could not reflect the authenticity of the period in terms of spatial quality.

Gazi Mustafa Kemal, Hakimiyet-i Milliye and İsmet Paşa Primary Schools are analysed under the title of 'Primary School Buildings' because they were built according to the type projects designed in the First Nationalist Architecture Period and have the same spatial organisation. The interiors of primary school buildings are generally simpler, with little use of ornamentation and decorative elements. In addition, although the variety of plan elements is small, the buildings have a good degree of authenticity of 42% due to the preservation of the holistic level of authenticity and the presence of examples that continue their original function.

6. Conclusion

The educational buildings constructed in Konya during the First National Architectural Period are important in terms of evaluating the architecture of the period. Although these educational buildings are few in number, they are important examples of the period as they add to the hundreds of years of architectural accumulation in the city of Konya. In addition, they have stylistic features in common with the buildings constructed in different parts of the country in the same period, but it can be seen that they have an important position among the buildings of the period with their unique features.

Within the framework of the study, the architectural characteristics of the educational buildings of the First National Architectural Period were examined and the originality values of the selected high schools in Konya of this period such as Sanayi Mektebi , Male Teachers' High School (Dârü-l Muallimin), Girls' Teachers' School (Dârü'l Muallimat) and Gazi Mustafa Kemal, Hakimiyet-i Milliye and İsmet Paşa Primary Schools were determined by analysing the facade and spatial quality.

According to the facade quality analysis, physical analyses such as the holistic authenticity levels of the facades of the selected schools, the diversity and functionality of the facade elements were carried out and scored. According to the results of the analysis, the Male Teacher's High School has an authenticity value of 91%, the Female Teacher's School has an authenticity value of 70% and the Sanayi Mektebi has an authenticity value of 44%. Gazi Mustafa Kemal, Hakimiyet-i Milliye and İsmet Paşa Primary Schools received values of 51%, 53% and 44% respectively.

According to the spatial quality analysis, the holistic authenticity level of the spaces of the selected schools, their planning status and the diversity of planning elements were evaluated. As a result of the scoring, the Male Teacher's High School has an authenticity value of 65%, the Female Teacher's School 25%, the Sanayi Mektebi 23% and the Primary School buildings 42%.

In this case, the reason why the Male Teachers' High School, located near the town square, has a high originality value according to the two analysis results is that it has richer facade and plan elements than the other buildings, and these elements have survived to the present day by preserving their original conditions. At the same time, the fact that this building, which has the characteristics of the period, has retained its original function without being abandoned to its fate was also effective. The other high school buildings lost their original function, tried to serve too many public institutions over time as part of the re-functionalisation, and began to lose their originality as a result of disasters such as fire.

The primary school buildings were designed on a smaller scale than the other schools, and due to the financial difficulties of the newly established country, they generally have the facade character of the first national architectural period in terms of facade features. The schools that do

not have rich ornamentation and decorative elements have preserved their original facade character to the present day. At the same time, the interiors of the buildings, which were designed as standard projects, are similar to each other and simpler than the understanding of the period.

As a result, according to this study, architectural buildings with historical characteristics should be re-functionalised with their original function if possible, and if not, they should be re-functionalised in a way appropriate to the structure. In this case, they should not be left to the initiative of the private or public institutions that house them, and restoration work should be carried out in accordance with the original. The original architectural conditions of the historic buildings, which constitute their value, should be preserved, their accessibility and visibility at the urban level should be ensured, and their recognition should be increased. In this way they will contribute to the city and the city will have a unique value. In future studies, the evaluation method created and developed in this research can be enriched by adding different criteria and applying different procedures.

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Resume

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Investigation of social change in cities after participation in cittaslow union in Ordu-Perşembe district

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Abstract

This study presents a case study of the social changes brought about by participation in the Cittaslow Union in cities. The research focuses on the Perşembe district of Ordu province and aims to analyze the effects of Cittaslow on the social structure. Data collection involved the use of 100 valid surveys. The results indicate that significant social changes occurred in the Perşembe district following its participation in the Cittaslow Union. Surveys and observations show an increase in tourism activities. This is due to heightened public awareness, which has been brought about by increased official institutional efforts to inform about Cittaslow. Furthermore, the Cittaslow Union's participation in Perşembe district has resulted in the wider availability of locally sourced food, increased promotion of cycling, and a reduction in vehicle noise pollution. Furthermore, the Cittaslow Union's participation in Perşembe district has resulted in the wider availability of locally sourced food, increased promotion of cycling, and a reduction in vehicle noise pollution. These changes have had a positive impact on the district's quality of life and social structure. The community has adopted a more sustainable and participatory lifestyle because of the Union's involvement. It can be inferred that the city has benefited from the approach. The identified changes demonstrate that participation in the Cittaslow Union in the Perşembe district has positive effects on the adoption of a sustainable and participatory lifestyle within the community. This study on the effects of the Cittaslow Union in the Perşembe district can be considered an important step in promoting sustainability and social participation in cities.

Keywords: awareness, cittaslow, cultural interaction, social change, quality of life

1. Introduction

The trend of globalization in the 20th century, accompanied by technological advancements and rapid modes of production, has transformed cities from regional entities to universal phenomena that can exist anywhere. This phenomenon rapidly engulfs settlement units, urban identities, and urban elements. The trend of global culture has resulted in the construction of multi-story buildings using the same architectural style and materials, leading to cities becoming increasingly homogenised (Kiper, 2004). As global similarities and connections increase, local ties and the identity of place weaken (Radstrom, 2014).

Simultaneously, there are views that fundamentally oppose the fast-paced lifestyle and consumption patterns brought about by globalization. One such perspective is the Slow Movement. In the realm of municipal governance, the International Cittaslow Movement focuses on preserving essence, identity, local values, and the significance of place, striving to maintain a high quality of life. The Cittaslow Movement was founded in Orvieto, Italy in 1999 by Paolo Saturnini, the Mayor of Greve in Chianti, with support from Francesco Guida, the Mayor of Bra, Stefano Cimicchi, the Mayor of Orvieto, Domenico Marrone, the Mayor of Positano, and Carlo Petrini, the Founder and President of Slow Food. The movement is embraced by the Cittaslow Association. Cittaslow is a

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term derived from the Italian word 'Città' (City) and the English word 'Slow.' It is used to denote a 'Slow City' (Vikipedi, 2020). The concept of a slow city, shaped by the slow movement, emphasizes a focus on local directions, including the preservation of endemic life forms, cultural values, and sustainable urban living (Erdoğan, 2020). According to Knox (2005), Cittaslow fosters an urge for people to rediscover 'place culture.' Pink (2008) defines it as a transnational movement that aims to enhance the quality of the environment and urban infrastructure through technology, while also advocating for the safe preservation of unique food production.

To become a member of the Cittaslow movement, fulfilling at least 50 out of approximately 72 criteria is required. These criteria are categorized under environmental policies, infrastructure policies, quality of urban life policies, policies related to agriculture, tourism, and craftsmanship, hospitality, awareness, and education plans, social cohesion, and partnerships (Cittaslow, 2020). Environmental policies cover programs for verifying air, water, and soil quality, as well as parks, green areas, renewable energy, and transportation. Infrastructure policies primarily concern alternative mobility criteria, bicycle lanes, and street furniture improvement. Policies for improving urban life include reevaluating and reusing marginal areas. Policies related to agriculture, tourism, and craftsmanship include practices such as prohibiting the use of GMOs in agriculture and enhancing traditional craftsmanship techniques and values. Hospitality, awareness, and education involve providing a warm welcome and increasing awareness among operators and traders. Social cohesion encompasses issues such as integrating disabled and impoverished individuals into society. Partnerships involve collaborating with organisations that promote regional potential. The interpretation of criteria and their weighting within the general framework outlining the main principles of the Slow City concept depends on the potential of settlements (Dogrusoy & Dalgakiran, 2011). The flexibility of the Slow City concept enables cities to take forward-looking steps based on principles they establish for themselves. These criteria must be fulfilled based on the principle derived from the Latin phrase 'festina lente', meaning 'hasten slowly'. The principle emphasizes the evaluation of present and future opportunities together, reflecting the best achievements of the past in the present context (Miele, 2008).

A literature review of the concept of Cittaslow reveals several studies conducted in various fields, including Urban and Regional Planning, Architecture, and Tourism. Mayer and Knox's (2006) study, titled 'Slow Cities: Sustainable Places in A Fast World,' addresses the Slow Food and Cittaslow Movement, providing an alternative approach to urban development. This study examines how urban policies have been reshaped in the German cities of Waldkirch and Hersbruck, which joined the Cittaslow Movement. The author, Radstrom (2006), aims to maintain a local sense of place and identity by addressing the Cittaslow Organization in the thesis titled 'An Urban Identity Movement Rooted in The Sustainability of Place: A Case Study of Slow Cities and Their Application in Rural Manitoba.' Çakar (2016) examines the impact of cultural heritage preservation approaches on the preservation of local values in cities that are members of the Cittaslow union in Turkey. Özmen (2016) compares urban conservation principles with the propositions of the International Cittaslow Movement, focusing on small historic urban settlements, to determine urban conservation principles. Senetra and Szarek-Iwaniuk (2020) classified member cities of the Cittaslow Movement in Poland based on their socio-economic development levels to demonstrate change. Temel (2018) examined the potential of creating sustainable cities through the concept of sustainable architecture within the context of Taraklı, using Cittaslow as an example. Orhan (2017) considered the Cittaslow Movement as a different approach to building sustainable cities and identified urban parameters. Baldemir, Kaya, and Şahin (2013) aim to address decision-making problems by exploring Cittaslow as a governance strategy in the context of sustainable cities. Uğurlu (2019) examines the impact of Cittaslow criteria on urban design in the case of Vize, emphasizing the importance of appropriate urban planning and design projects.

This study addresses the research question by examining the social changes in cities following membership in the Cittaslow Union, filling a gap in the literature regarding the specific effects of the Slow City Movement on social structures and community dynamics. According to the survey

results conducted in the Perşembe district of Ordu, tourism activities have increased, local cuisine has been promoted, noise pollution has been reduced, access has been facilitated through bicycle paths, and the local economy has been supported. This highlights how Cittaslow membership has influenced social interactions, cultural diversity, economic activities, and environmental aspects in urban environments, providing valuable insights for urban planning and sustainable development initiatives. In conclusion, participation in the Cittaslow Union has had positive effects on the social structure and significantly contributed to the adoption of a sustainable and participatory lifestyle in the city.

2. Theoretical Background

The foundations of Cittaslow were established with the motto of the 'Slow Movement.' This social movement critiques the fast-paced modern lifestyle and advocates for a cultural shift that transforms the speed and consumption patterns in various aspects of life, including eating habits, economic life, and interpersonal relationships (Vikipedi, 2020). The Slow Movement philosophy has been adopted in various fields, including gastronomy, urban governance, tourism, media, travel, architecture, and design.

Cittaslow, which means 'slow city' in Italian, is an example of this movement. The term 'slow' may initially have negative connotations, but it refers to a deliberate and conscious approach to living. However, the association of slowness with time does not necessarily imply doing everything at a snail's pace (Özmen & Can, 2018). Instead, Cittaslow leverages the best aspects of globalization stemming from the blend of the region's new technologies and traditions, utilizing the fundamental identity and spirit of society against the backdrop of the modern world (Carp, 2012a).

Cittaslow is an international association that is rooted in the essence of the Slow Movement. It is founded upon the principle of 'festina lente', which is derived from Latin and means 'make haste slowly'. This principle signifies finding contemporary equivalents of past achievements and evaluating the possibilities of the present and future together (Miele, 2008). Cittaslow is embraced by small settlements. The union was founded in Orvieto, Italy in 1999 by Paolo Saturnini, the Mayor of Greve in Chianti, with support from Francesco Guida, the Mayor of Bra, Stefano Cimicchi, the Mayor of Orvieto, Domenico Marrone, the Mayor of Positano, and Carlo Petrini, the Founder and President of Slow Food (Cittaslow, 2020).

Mayer and Knox (2006) define Cittaslow as the local implementation of criteria related to quality of life. Nilsson, Svärd, Widarsson, and Wirell (2011) describe it as a network of cities embracing both urban and rural development. Carp (2012b) characterizes Cittaslow as a comprehensive movement encompassing infrastructure and urban form, land use, and economic development. Miele (2008) describes it as a network of small towns that focus on preserving place-based urban identity through urban design and planning.

The Cittaslow movement aims to provide a realistic alternative for people to communicate, socialize, and live in self-sufficient, sustainable communities that uphold crafts, nature, traditions, and customs. It also addresses infrastructure issues, utilizes renewable energy sources, and benefits from the conveniences of technology (Cittaslow, 2020).

The movement also encourages cities to embrace their local and unique identity. The Cittaslow Movement aims to enhance the quality of urban life for individuals by preserving the city's distinctive characteristics while simultaneously improving it (Radstrom, 2014). Cities strive to implement the criteria set forth by the Cittaslow Union to achieve these goals. These criteria are classified under seven main headings: environmental policies, infrastructure policies, quality of urban life policies, policies related to agriculture, tourism, and craftsmanship, hospitality, awareness and education plans, social cohesion, and partnerships. Out of approximately 72 criteria, 31 are mandatory, and 5 are perspective. To meet the requirements, at least 50 criteria must be fulfilled (Cittaslow, 2020) (Table 1). The criteria are periodically updated by the International Coordination Committee following annual international congresses. The most recent version was

approved after the International Congress in Midden Delfland, the Netherlands in 2014. The congress emphasized the importance of youth involvement in the Cittaslow process (Özmen, 2016). In addition to this process, a new initiative has been introduced that allows national networks to add new criteria specific to their local conditions, provided that they do not exceed twenty percent of the respective main heading (Temel, 2018).

Table 1 Criteria set by the Cittaslow Union (Source: Cittaslow, 2020)

Environmental policies	• Documentation of air cleanliness meeting parameters specified by law * • Documentation of water cleanliness meeting parameters specified by law * • Comparison of public drinking water consumption with national average • Collection of urban solid waste through separation * • Support for industrial and domestic composting. • Availability of wastewater treatment plant for urban or bulk sewage * • Energy saving in buildings and public use areas. • Public production of energy from renewable energy sources • Reduction of visual pollution and traffic noise • Reduction of public light pollution * • Per capita electricity consumption • Preservation of biodiversity • Encouragement of establishing "energy communities" for self-production and consumption of energy from renewable sources
Infrastructure policies	• Efficient bicycle lanes connected to public buildings. • Comparison of existing bicycle lanes with vehicle lanes on a kilometre basis * • Bicycle parking facilities at transfer centres such as metro and bus stops Planning of eco-friendly transportation as an alternative to private vehicle usage * • Removal of architectural barriers for people with disabilities * • Initiatives for family life and pregnant women * • Approved accessibility to health services • Sustainable distribution of goods in city centres • Percentage of urban residents working outside the city *
Urban life quality policies	• Planning for urban resilience ** • Enhancement of urban values, programs to increase the value of city centres and public buildings * • Improvement and/or creation of social green areas using efficient plants and fruit trees ** • Increasing urban liveability • Reassessment and utilization of marginal areas * • Utilization of information and communication technologies in developing interactive services for citizens and tourists * • Establishment of a service desk for sustainable architecture * • Access to the city's internet network * • Monitoring and reduction of pollutants * • Development of telecommuting • Promotion of personal sustainable urban planning • Support for social infrastructure. • Promotion of public sustainable urban planning * • Utilization of efficient plants for enhancing useful green spaces within the city ** • Creation of areas for commercialization of local products * • Preservation and enhancement of workshops – creation of natural/local shopping centres * • Amount of concrete used in green areas
Policies on agriculture, tourism, tradesmen, and craftsmen	• Development of agroecology ** • Preservation of handmade and ethically labelled or branded artisanal products * • Enhancement of the value of traditional craftsmanship and artisanal techniques • Increasing access to services for rural residents to enhance the value of rural areas * • Utilization of local, preferably organic products in public restaurants (school cafeterias, soup kitchens, etc.) * • Provision of taste education in personal use and food sectors, and promotion of the use of organic local products where possible * • Preservation and enhancement of local and traditional cultural events and values * • Increase in hotel capacities * • Ban on the use of GMOs in agriculture. • Presence of new ideas for zoning plans regarding the use of previously used areas for agriculture

Social adaptation	• Efforts against discrimination towards minorities • Coexistence of people with different ethnic backgrounds in the same neighborhood • Integration of disabled individuals • Support for childcare. • Employment status of the younger generation • Poverty • Existence of social partnerships/civil society organizations • Integration of different cultures • Political participation • Municipal investment in public housing • Presence of areas for youth activities and a youth center
Hospitality, Awareness, and plans for training	• Hospitality initiatives* • Increasing awareness among merchants and operators * • Availability of slow routes • Adoption of active techniques facilitating grassroots-to-top participation in significant governance decisions • Continuous education for educators, managers, and staff on Cittaslow themes ** • Health education programs • Systematic and enduring education for local residents about the meaning of Cittaslow* • Active presence of associations collaborating with local government on Cittaslow initiatives • Support for Cittaslow campaigns * • Use of the Cittaslow logo on the website and letterheads *
Partnerships	• Support for Cittaslow activities and campaigns. • Collaboration with other organizations promoting natural and traditional foods. • Support for twinning projects and collaborations aimed at the development of developing countries and the dissemination of the Cittaslow philosophy

*Mandatory, **perspective

3. Material and Method

This study examines the social impact of joining the Cittaslow Union on cities, using qualitative research designs such as observation and surveys. The survey was designed in a closed-ended 5-point Likert scale format to enable participants to express their opinions on a specific topic and measure their emotional responses (Likert, 1932). The scale mentioned is a useful means of identifying the varied perspectives of participants (Kriksciuniene, Sakalauskas, & Lewandowski, 2019). The survey was pre-designed based on the opinions of expert architects and urban planners in the field. Participants were selected randomly from the residents of the Perşembe district, and the survey was administered to them. Consent was obtained from the participants, and the data were stored in accordance with principles of privacy and anonymity. To ensure the reliability and validity of the study, we implemented various measures such as following standardized procedures during data collection and using double-check mechanisms for data accuracy and reliability (Creswell, 2013).

The Perşembe district of Ordu, located on the coast of the Black Sea in Turkey, is renowned for its natural beauty and cultural heritage. The text is clear, concise, and objective, with a logical flow of information and precise word choice. The Perşembe district of Ordu, located on the coast of the Black Sea in Turkey, is renowned for its natural beauty and cultural heritage. Its long beaches, clean sea, and mountainous areas make it a popular tourist destination. The content of the improved text is as close as possible to the source text, with no additional aspects added. The Perşembe district of Ordu, located on the coast of the Black Sea in Turkey, is renowned for its natural beauty and cultural heritage. The language is formal and free from grammatical errors, spelling mistakes, and punctuation errors. Furthermore, the district of Perşembe boasts a rich historical and cultural heritage, featuring historical mansions, mosques, and local handicrafts dating back to the Ottoman period. This makes it a significant destination where natural beauty and cultural heritage converge.

It is a significant settlement in the Black Sea Region, chosen as the study area (Figure 1). Its location on the coast of the Black Sea, with long beaches, clean sea, and mountainous areas,

indicates its remarkable geographical structure. This geographical location forms the foundation of Perşembe's natural beauty and tourism potential. Perşembe is a district with a rich historical and cultural heritage. It boasts historical mansions, mosques, and local handicrafts dating back to the Ottoman period, making it an attractive destination for those interested in the past. In 2012, Perşembe joined the Cittaslow Union, which promotes the concept of a slow city. This philosophy promotes the enjoyment of life, living in harmony with nature, and sustainability. Perşembe district engages in various activities such as supporting the local economy, reducing traffic and noise pollution, increasing green spaces, and preserving cultural values. As a result, it has become an important city where natural beauty and cultural heritage converge.

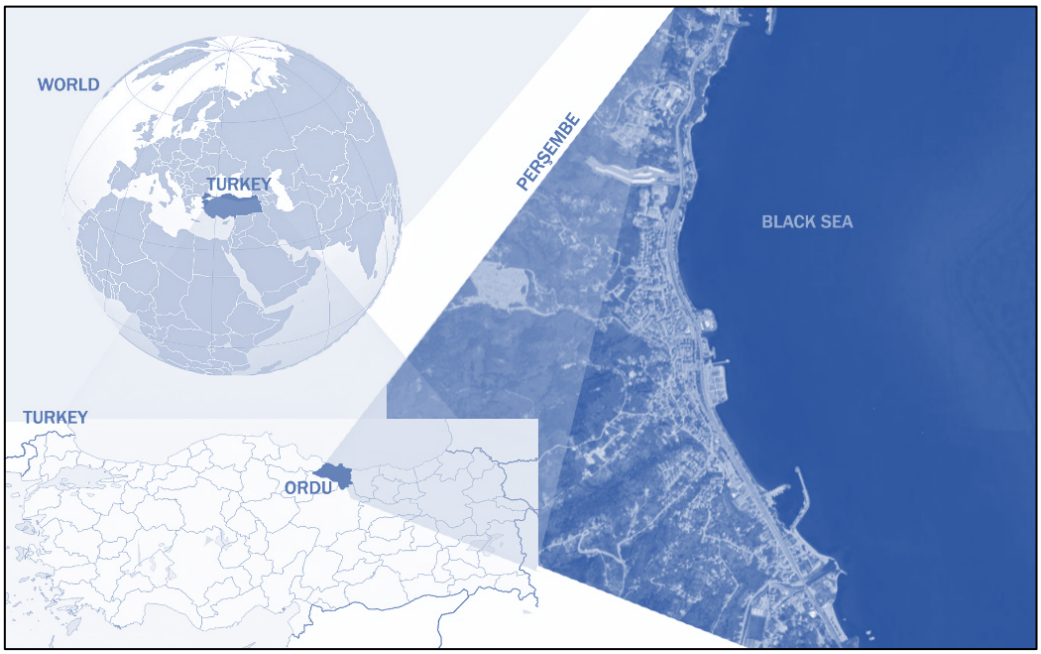

Figure 1 Approach to the study area (source: developed from Google Earth)

4. Findings

The research study conducted to investigate the effects of social changes in the Perşembe district after joining the Cittaslow Union was designed considering the factors influencing social change identified in the literature. Firstly, analyses were carried out on parameters such as gender, age, education level, income status and occupation in order to determine the social and demographic structure of the settlements. This was followed by an in-depth study of the changes that occurred after joining the Cittaslow Union.

4.1. Demographic Findings Analysis

The Perşembe district, situated in the Black Sea region of Turkey, has a population of 31,278 people. According to the Turkish Statistical Institute (TÜİK, 2024), 48.27% of the population are woman, and 51.73% are men. The age distribution among survey participants revealed that there were 60 individuals in the under 17 age group, 4 individuals in the 18-23 age group, 6 individuals in the 24-29 age group, and 30 individuals in the 30 and over age group. In terms of educational attainment, 8% of survey participants have completed primary school, 41% have completed middle school, 33% have completed high school, and 18% are university graduates. The analysis of occupational distribution reveals a predominance of students, with a notable inclination towards the private sector. Despite being a small and tranquil settlement, Perşembe district has a significant influence on the local economy and social life.

An examination aimed at determining the income status of survey participants revealed that 65% of individuals have incomes below 17,000 TL. Additionally, 8% of participants have incomes ranging between 25,000 TL and 35,000 TL. While 23% earn between 35,000 TL and 45,000 TL, 4%

have incomes exceeding 45,000 TL. These findings indicate that a majority of individuals in Perşembe district have incomes around 17,000 TL, suggesting a lack of income disparity and social class differentiation. The absence of income inequalities and the balanced distribution of income serve to strengthen social cohesion (Table 2).

Table 2 Normal Distribution Analysis of Surveys Conducted in Perşembe District

		Count	%
Gender	Woman	68	68,0%
	Men	32	32,0%
Age	17 and under	60	60,0%
	18-23 ages	4	4,0%
	24-29 ages	6	6,0%
	30 ages and older	30	30,0%
Educational status	Primary school	8	8,0%
	Middle school	41	41,0%
	High school	33	33,0%
	University	18	18,0%
Income status	≤17.000 TL	65	65,0%
	25.000≤x≤35.000 TL	8	8,0%
	35.000≤x≤45.000 TL	23	23,0%
	45.000 TL <	4	4,0%

4.2. Interpretation of Survey and Observation Results

Table 3 presents the analysis of surveys conducted in the Perşembe district before and after its membership of the Cittaslow Union, focusing on the normal distribution of the data. Normal distribution is a significant statistical concept that signifies data being evenly distributed around the mean, forming a bell-shaped curve. Skewness and kurtosis coefficients are important indicators in this context. Skewness measures the symmetry of data distribution, with a value of 0 indicating perfect symmetry. Kurtosis measures the shape of the distribution curve, with a value of 0 indicating normal distribution. However, achieving this ideal condition in practice can be challenging. Therefore, it is generally acceptable to assume normal distribution when skewness and kurtosis values fall between -1 and +1 (George & Mallery, 2001; Leech, Barrett, & Morgan, 2013).

The data related to environmental impact before membership of the Cittaslow Union have a skewness value of 0.329 and a kurtosis value of -0.299, both of which fall within the expected range of -1 to +1, suggesting a normal distribution. Similarly, the data after membership of the Cittaslow Union have a skewness of -0.492 and a kurtosis of 0.200, also within the acceptable range for a normal distribution. Finally, regarding data on the environmental impact of membership of the Cittaslow Union, the skewness value is -0.717 and the kurtosis value is 0.202, indicating a normal distribution.

To further analyze these findings, an independent sample t-test was conducted to determine if there were significant differences between genders in their perceptions of the environmental impact of joining the Cittaslow Union. The study found no significant differences between men and women in their perceptions of the environmental impact of Cittaslow membership before, after, and following their membership in the union. This suggests that gender does not play a significant role in determining individuals' perceptions of the environmental impact of Cittaslow membership.

Table 3 Normal Distribution Analysis of Surveys Conducted in Perşembe District

	N	Skewness		Kurtosis	
Gender	Statistic	Statistic	Std. Error	Statistic	Std. Error
Before becoming a member of the Cittaslow Union	100	**0,329**	0,241	**-0,299**	0,478
After becoming a member of the Cittaslow Union	100	**-0,492**	0,241	**0,200**	0,478

Environmental impact following membership in the Cittaslow Union	100	**-0,717**	0,241	**0,202**	0,478
Valid N (listwise)	100				

Table 4 presents an analysis of gender disparities in the evaluation of participation in the Cittaslow Union in the Perşembe district. The table includes the results of Levene's Test for Equality of Variances and t-tests for Equality of Means to determine if significant differences exist between men and women in their perceptions of Cittaslow Union participation.

Levene's Test for Equality of Variances is a statistical test used to assess whether the variances of two or more groups are equal. In Table 4, this test determines whether there are differences in the variance of participation perceptions between genders. The results show that for each data pair (pre-membership, post-membership, and post-membership environmental impact), variances fall within an acceptable range, indicating similar variances among groups.

On the other hand, t-tests for Equality of Means determine whether there is a statistically significant difference between the means of two independent groups. In this case, it evaluates whether significant differences exist in how men and women perceive participation in the Cittaslow Union. The test results provide mean differences, standard errors, confidence intervals, and p-values for each data pair.

Table 4 findings suggest that there are no significant differences between men and women in their evaluation of Cittaslow Union participation. This implies that gender does not influence how individuals perceive the impact of Cittaslow membership. The statistical analysis provides valuable insights into gender dynamics within sustainable urban development initiatives and underscores the importance of inclusive and equitable participation in such programs.

Table 4 Analysis of Gender Disparities in the Evaluation of Participation in the Cittaslow Union

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval
						One-Sided p	Two-Sided p			Lower / Upper
Before becoming a member of the Cittaslow Union	Equal variances assumed	0,00	**0,96**	-0,14	98,00	0,45	**0,89**	-0,10	0,73	-1,54 / 1,34
	Equal variances not assumed			-0,14	98,00	0,45	0,89	-0,10	0,73	-1,54 / 1,34
After becoming a member of the Cittaslow Union	Equal variances assumed	0,06	**0,81**	-0,21	98,00	0,42	**0,84**	-0,12	0,58	-1,28 / 1,04
	Equal variances not assumed			-0,21	97,78	0,42	0,84	-0,12	0,58	-1,28 / 1,04
Environmental impact following membership in the Cittaslow Union	Equal variances assumed	0,98	**0,32**	0,64	98,00	0,26	**0,52**	0,22	0,34	-0,46 / 0,90
	Equal variances not assumed			0,64	93,83	0,26	0,52	0,22	0,34	-0,46 / 0,90

Table 5 shows the analysis of social change in Perşembe District before and after membership of the Cittaslow Union. The mean values show a significant difference in the social aspects following

the membership in the Cittaslow Union. Before the membership, the mean value was 58.17 and after the membership it increased to 86.58. This increase indicates a positive impact on social change in the district after membership of the Cittaslow Union.

The results of the paired samples t-test indicate a statistically significant difference in social change before and after membership of the Cittaslow Union. Both pairs have p-values less than 0.001, indicating a high level of significance (t=61, df=99, p<0.001). The confidence intervals also support the findings, demonstrating that membership in the Cittaslow Union has a substantial effect on social change. This statistical analysis confirms that membership in the Cittaslow Union has led to a significant social transformation in Perşembe District.

Table 5 Analysis of Social Change in Perşembe District Before and After the Membership of Cittaslow Union

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before becoming a member of the Cittaslow Union	58,17	100,00	3,61	0,36
	After becoming a member of the Cittaslow Union	86,58	100,00	2,90	0,29
Pair 2	Before becoming a member of the Cittaslow Union	58,17	100,00	3,61	0,36
	Environmental impact following membership in the Cittaslow Union	27,47	100,00	1,71	0,17

Paired Samples Test										
		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	Before becoming a member of the Cittaslow Union - After becoming a member of the Cittaslow Union	-28	5	0	-29	-27	-61	99	<,001	**<0,001**
Pair 2	Before becoming a member of the Cittaslow Union - Environmental impact following membership in the Cittaslow Union	31	4	0	30	31	76	99	<,001	**<0,001**

5. Discussion

This The study's discussion section delves into sustainable urban initiatives and the importance of community engagement in promoting positive transformations. It focuses on the impact of Cittaslow on the social structure of Perşembe district in Ordu province. The research highlights the role of the Cittaslow movement in promoting sustainable and participatory lifestyles in urban environments.

It emphasizes the multifaceted benefits of sustainable practices and advocates for a sustainable and inclusive way of life within communities. The study also highlights the pivotal role of the Cittaslow movement in this regard. The findings show that being a member of the Cittaslow Union has resulted in concrete social changes in Perşembe district. These changes include an increase in tourism activities, promotion of locally sourced products, and a decrease in vehicle noise pollution. These changes have not only enhanced the quality of life for residents but have also helped to create a more dynamic and environmentally aware community.

The demographic analysis conducted as part of the study shows a balanced income distribution and high levels of education among residents of Perşembe district. This balanced socio-economic profile fosters social cohesion within the community by ensuring equitable distribution of resources

and opportunities. Such fair distribution of resources can strengthen social bonds and promote inclusivity within the district.

Statistical tests assessing the impact of Cittaslow membership on social change show a significant difference before and after joining the Union. This statistical evidence emphasises the transformative effects of sustainable initiatives in urban environments and highlights the importance of movements like Cittaslow in driving positive change within cities.

The study's emphasis on promoting sustainability and community engagement aligns with global efforts to address urgent environmental and social challenges. Cities that prioritize principles of local identity preservation, sustainable urban living, and community participation can create more resilient and liveable environments for their residents. The Cittaslow movement offers a valuable framework for cities looking to improve their quality of life while preserving their unique cultural heritage.

Research on the social changes induced by participation in the Cittaslow Union highlights the significance of sustainable urban initiatives in promoting positive transformations within communities. Cities such as Perşembe, which embrace sustainability and community engagement principles, can lead the way towards a more inclusive, vibrant, and environmentally conscious future.

6. Conclusions

This study examines the impact of membership of the Cittaslow Union on social change, focusing on the district of Perşembe in the province of Ordu and highlighting the positive effects of sustainable initiatives on the urban environment. The Cittaslow movement aims to preserve local values, cultural heritage, and sustainable urban living. Perşembe and other cities aim to enhance their distinct identities and improve residents' quality of life in line with Cittaslow Union standards.

The study's methodology involved collecting data from 100 valid surveys to analyze social structure changes in Perşembe district. The results show that membership of the Cittaslow Union has led to significant social changes in Perşembe District. These modifications comprise an increase in tourism activities, promotion of locally sourced products, promotion of bicycle usage, and a reduction in vehicle noise pollution. These changes have had a tangible positive impact on the quality of life and social dynamics of the district, encouraging the adoption of a more sustainable and participatory lifestyle among its residents.

The demographic analysis of Perşembe district shows a balanced income distribution and high levels of education among its residents, which contributes to social cohesion within the community. Statistical analyses indicate a significant difference in social change before and after membership in the Cittaslow Union.

In conclusion, this study highlights the significance of the Cittaslow movement in promoting sustainability, social participation, and improving the quality of life. Cities that adopt the principles of preserving local identity and promoting sustainable urban living can create more liveable and vibrant environments for their residents. This research highlights the positive outcomes of joining the Cittaslow Union and sheds light on initiatives in urban planning and sustainable development.

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Resume

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Drivers of socio-spatial change in Istanbul: Historical and longitudinal analysis of 5 cases from Bakırköy

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Gülden Erkut**

Abstract

This article aims to reveal the social and spatial change in Bakırköy through time and to identify the drivers behind this transformation. Bakırköy has been chosen as it hosted the Roman, Byzantine, and Ottoman Empires, leading to its multicultural and layered structure. It has been influenced by the dominant features of each era, shaping socio-economic changes, spatial transformations, and urban planning practices over the historical process. The interaction of these socio-spatial elements within Bakırköy encompasses broad themes such as social differentiation, economic change, and urban governance, thereby presenting case studies to examine the dynamics of urban areas in Istanbul. The research has been conducted at two levels. First, spatial changes were examined through relevant documents, literature, and historical maps. The periods were determined as the state-led development period (1923-1950), liberalization period (1950-1980), neoliberal transformation period (1980-2000), and globalization period (post-2000), with the pre-1923 period being considered separately. Subsequently, five case studies were selected to represent different functional land use at the local level. The first case study involves an area known as the İskender Çelebi Farm in the 17th century, which was chosen to represent the transformation from a food production area to industrial production in the 18th century and has become a mass housing area in the 20th century, now known as the Ataköy districts. The second and third case studies represent the transformation from industrial production areas in the 19th and early 20th centuries to residential, tourism, and shopping areas. The fourth case study focuses on the coastal strip, which was used as a public space for 'sea baths' in the 19th century and today exists as luxury housing projects under private ownership. The fifth case study involves an area that served as an airport in the early 20th century and is currently planned for a hospital and green spaces, although it remains a public service.Through these cases, which demonstrate the shift from the productional use of space to consumption, the study seeks to answer the following questions: First, how do demographic and economic changes play a significant role in the differentiation of urban space, and in a related context, what is the local-scale impact of changing policies on the functional change of the selected cases? The findings reveal that industrial investments, supported by transportation investments, choose their locations in the changing/transforming economic order. The decentralization of industry and the privatization or transformation of public investments into consumption-focused urban areas through public-private partnerships have also been observed. The study aims to prove that this change in space lays the groundwork for social differentiation.

Keywords: land use change, periodic features, social differentiation from past to present Bakırköy, temporal-spatial characteristics

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1. Introduction

The geographical positioning of cities, alongside the opportunities extended by their transportation infrastructures and the burgeoning of industrial zones, significantly contributes to urban growth and the shaping of spatial configurations. This study delves into the socio-spatial changes within urban areas with a particular focus on Bakırköy, tracing its evolution from the late Ottoman era through to the contemporary period marked by globalization. The intricate interplay between state policies, capital flows, and social stratifications has critically influenced these transformations, initiating a pivotal shift in the urban fabric from the establishment of the Republic of Turkey onwards (Kurtuluş, 2005). The advent of industrial capitalism in Western Europe in the 19th century and its ideological and spatial manifestations introduced a new paradigm of urban development, which was subsequently adopted and modified within the Turkish context (Tekeli & İlkin, 1987). The post-republic era saw the Turkish state adopt an active role in industrial investment leading to a period of planned urban development which was only disrupted by World War II and further shifts precipitated by the 1973 oil crisis (Arslan, 1997; Castells, 1992; Ersoy, 1993).

However, existing literature on socio-spatial change often glosses over the nuanced dynamics specific to regions like Bakırköy where a unique confluence of historical, economic, and policy-driven factors has sculpted the urban landscape. Previous studies have predominantly focused on macro-level analyses, frequently overlooking the localized impacts of such transformations on urban land use, the socio-economic fabric of communities, and the changing patterns of residential and industrial spaces (Akın, 2011; Kurtuluş, 1999). By critically examining historical periods such as those proposed by Boratav (Boratav, 2009), which delineate Turkish history through economic epochs, this research aims to bridge the gap in the literature by providing an in-depth exploration of how these broader trends have specifically manifested in Bakırköy's spatial and social structure.

Furthermore, this study introduces an original perspective by incorporating a detailed analysis of land use changes through historical cartography and evaluating the implications of shifting governmental policies and lifestyle changes on the local urban morphology. In doing so, it not only highlights the specificities of Bakırköy's development within the broader context of Turkish urbanization but also contributes to a more comprehensive understanding of the socio-spatial dynamics at play. By comparing the characteristics of different periods—from the early Republican era's state-led development to the neoliberal and globalization phases of post-1980—this research offers novel insights into the intricate processes shaping urban spaces and their social implications in a rapidly changing world.

In essence, this study seeks to elucidate the multifaceted nature of socio-spatial change in Bakırköy, contrasting its trajectory with that of other urban areas while underscoring the unique contributions and challenges that define its urban evolution. Through this approach, the research not only fills a significant void in the existing body of work but also sets the stage for future inquiries into the complex interrelations between urban development policies, economic transformations, and social dynamics.

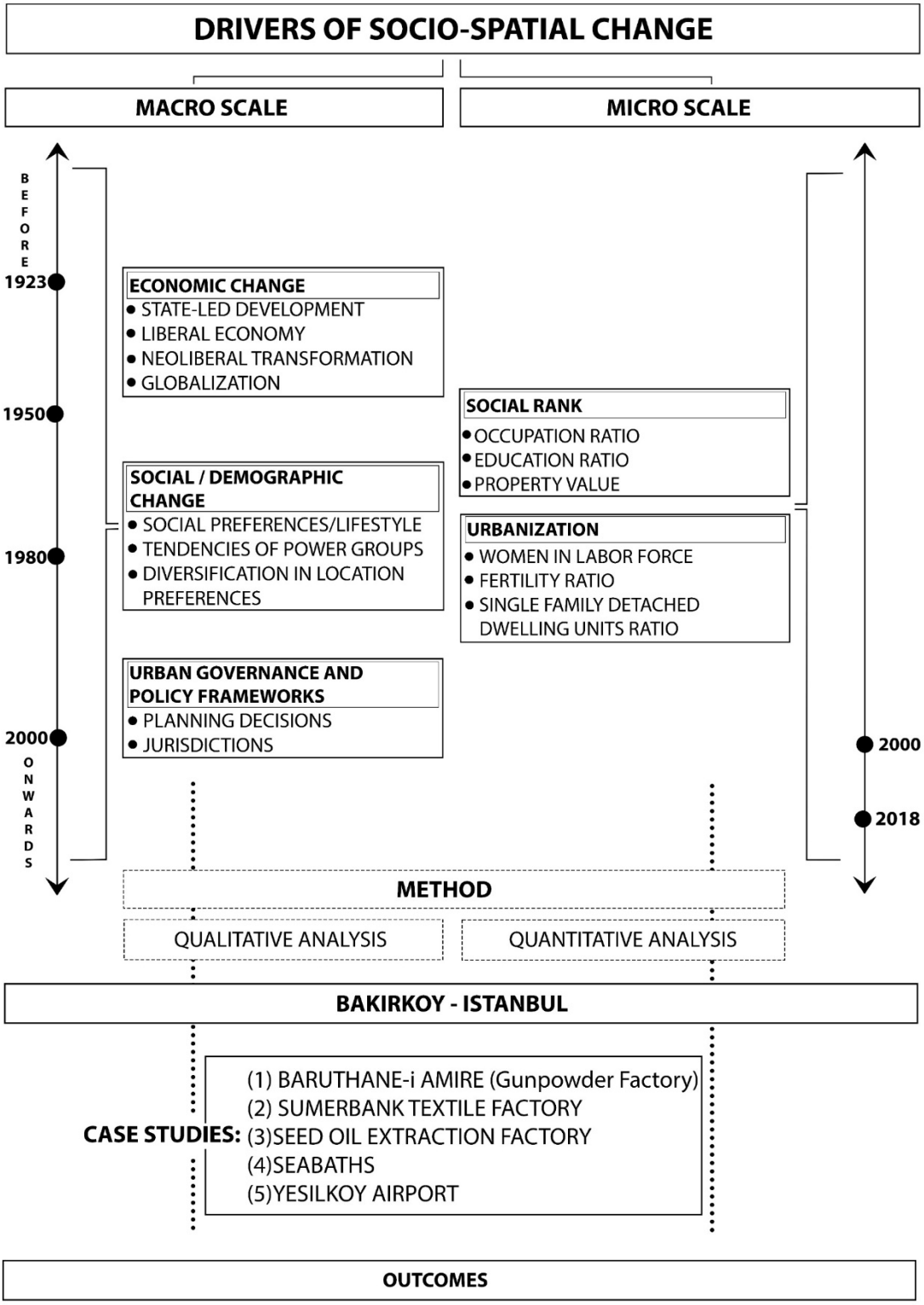

Figure 1 Conceptual framework

In assessing the urban development of Bakırköy on a macro scale, it is evident that the spatial effects of the post-republic era's production-focused state investment, the transition to a liberal economy in the 1950s, the influence of neoliberal policies on the economy post-1980, and the subsequent globalization process can be observed in conjunction.

At the micro scale, social and demographic factors such as changes in social preferences, lifestyles, and public opinion come to the fore. However, urban governance and policy frameworks show that local planning decisions and jurisdictional boundaries have a direct impact on the city.

For example, local government decisions in urban planning can dramatically affect the social structure and settlement patterns of a city.

The five case studies—Baruthane-i Amire (Gunpowder Factory), Sümerbank Textile Factory, Seed Oil Extraction Factory, Sea Baths, and Yeşilköy Airport—provide concrete examples of how Bakırköy was transformed over different time periods. Each case study reflects the long-term effects of economic policies and urban planning decisions, as well as the challenges of preserving local memory and social identity.

This comprehensive framework (Figure 1) highlights the complex nature of socio-spatial change occurring in Bakırköy. This study initially adopts a comprehensive framework, subsequently identifies and analyzes the driving forces, and ultimately comprehends the fundamental causes behind the social and spatial changes within the unique context of Bakırköy.

2. Drivers of Socio-Spatial Change in Bakırköy

A study by Dadashpoor and Malekzadeh in 2020 classified the driving factors affecting the spatial structure of metropolitan areas into four main dimensions: developmental, transformative, contextual and intrinsic, and incentive and disincentive. Furthermore, their study divided these dimensions into subcategories. Dadashpoor and Malekzadeh's developmental dimension encompasses the economic, communication, and infrastructure development forces that shape the spatial structure of metropolitan areas, highlighting how investments, accessibility, and physical growth drive change and development within these regions. The authors' transformative dimension captures the internal and external factors, including demographic shifts, social changes, and government policies, that instigate transformations within the spatial structure of metropolitan areas, influencing their evolution through planning, migration, and social processes. Their contextual and intrinsic dimension refers to the stable and less mutable factors, such as geographical, historical, and environmental characteristics that inherently influence the spatial organization and development patterns of metropolitan areas, underpinning the foundational context for other dynamic changes. Dadashpoor and Malekzadeh's final incentive and disincentive dimension explores the motivators and deterrents affecting urban spread including policies and socio-economic shifts that either encourage dispersion and development in new areas or discourage excessive concentration in already densely populated centers.

In reference to the above study, our research covers the subcategories related to spatial change. Within the developmental dimension, we explore the role of public infrastructure development, property value fluctuation, and the restructuring of industry as pivotal forces. For instance, the transformation of Bakırköy's industrial areas into residential and commercial spaces underscores the impact of economic shifts on urban form. The selection of these subcategories is justified by their direct influence on the urban growth patterns observed in Bakırköy where historical industrial sites have given way to mixed-use developments, reflecting broader trends in urban redevelopment. Within the transformative dimension, we explore the effects of migration, land use policies, and spatial planning initiatives. Bakırköy's demographic evolution, shaped by both internal migration and international influxes, provides a lens through which to assess the socio-spatial impacts of these factors. The decision to focus on migration patterns is informed by the area's history as a recipient of diverse population groups, which has enriched its cultural fabric and simultaneously posed challenges for urban planning and service provision. Focusing on Bakırköy's historical settlement patterns, environmental context, and social differentiation, within the contextual and intrinsic dimension, we highlight the enduring influence of geographical and historical factors on urban development. The preservation of Bakırköy's historical heritage, amidst rapid urbanization, reflects the ongoing tensions between development and conservation. These factors are chosen for their significance in shaping the district's identity and their implications for contemporary urban planning practices. Within the incentive and disincentive dimension, we address the dual forces of municipal regulation and household lifestyle change. The rise of new residential typologies in Bakırköy, catering to evolving consumer preferences for green spaces and

recreational amenities, illustrates the complex interplay between policy directives and market dynamics. The emphasis on municipal regulations is particularly pertinent in light of recent urban renewal projects which have transformed the district's physical landscape and socio-economic profile.

2.1. Historical Background of Bakırköy

Bakırköy's history dates back to the 2nd century BCE. Known as Hebdomon from the 4th century, it was one of the most important settlements outside of Constantinople. Located on the Via Egnatia—the main road connecting the capital Constantinople to Europe—it is a fishing village situated seven miles west of the Milion Monument, which rises at one end of the Augusteion Square in front of Hagia Sophia. Augusteion Square is considered the starting point of all roads leaving the capital (Kuban, 1996). Hebdomon's real significance began with Emperor Constantine the Great (AD 272-337), becoming a resort center where summer palaces, mansions, gardens, cisterns, churches, and monasteries were built. Hebdomon was burned on multiple occasions between 104 and 1261 AD, suffered complete destruction during the Latin invasion of the Byzantine Empire, and eventually lost its importance. After this date–in the last period of the Byzantium–it was a small fishing village known as Makri Khori (Khora), meaning 'Long Village' due to its long coastline. After the conquest of Byzantium, during the Ottoman Period, Khora was changed to Makri Village (Makriköy). In the early 17th century, new settlements were established in the area; mansions, palaces, mosques, and baths began to be built in Makriköy (Koçu, 1944). The region's importance increased further when a gunpowder mill was moved there during Sultan Mahmud II's reign, and over time–due to ease of transportation–many factories were established, turning the old fishing village into an industrial center (Bilgin & Yarış, 2011). Following the proclamation of the Republic and the Turkification of place names, Makriköy was renamed Bakırköy in 1925 (Tuna, 2000) (Erez, 2009).

2.2. Administrative Division and Boundaries

In 1926, Bakırköy became a district through the passage of Law No. 877 by the Grand National Assembly. In 1957, Zeytinburnu was separated from the boundaries of Bakırköy and became a district. Subsequently, until 1989, Bakırköy, bordered by Çatalca to the west, Eyüp and Gaziosmanpaşa to the north, and Zeytinburnu to the east, covered an area of 275 km², making it the largest district of Istanbul.

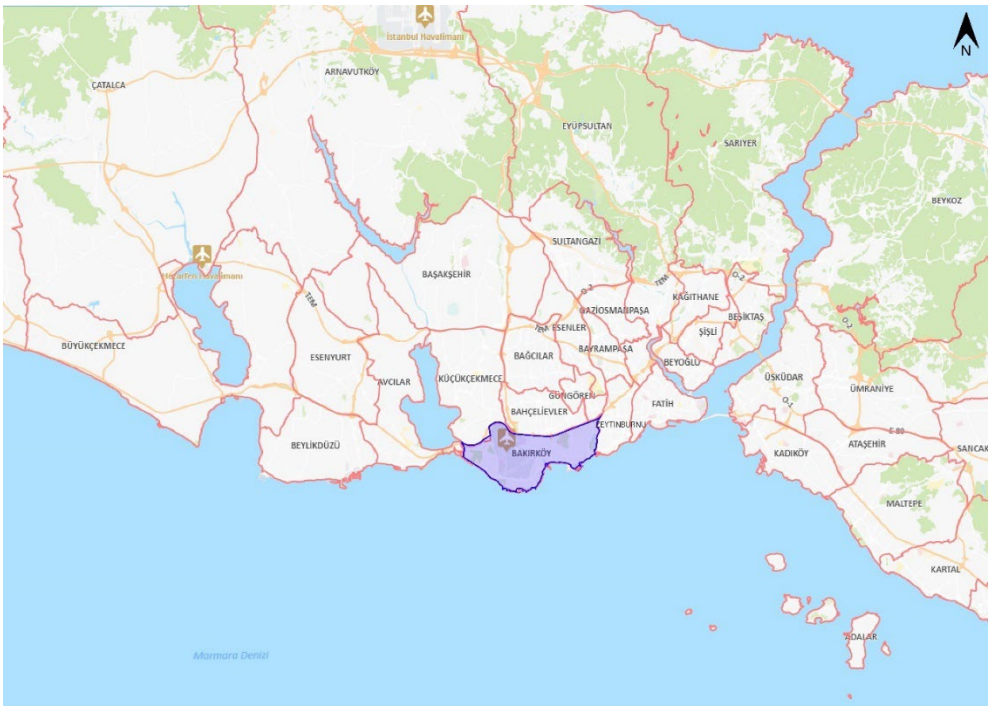

Figure 2 The location of Bakırköy in Istanbul (*Source:* IBB Sehir Rehberi (City Guide), 2024)

In 1989, Küçükçekmece was separated from Bakırköy to become a distinct district, followed by Bağcılar, Bahçelievler, and Güngören in 1992. These separations of resulted in a decrease in both the population and area of Bakırköy. Currently, Bakırköy district encompasses an area of 35 km². It consists of the Central Bakırköy Region, Ataköy Region, Yeşilköy Region, and Florya Region, comprising a total of 15 neighborhoods. This paper's research area is bordered by the Ayamama Creek to the west (marking the boundary with Küçükçekmece district), the Çırpıcı Creek to the east (marking the boundary with Zeytinburnu district), the D-100 highway to the north (marking the boundary with Bahçelievler district), and the Sea of Marmara to the south.

2.3. Movements of People into and out from Bakırköy

In this section, statistical information related to the ethnic composition of the research area–specifically in terms of population–will be provided, and changes in patterns of migration over the years will be described.

Following the Ottoman conquest of Constantinople, people from every city of the Empire were resettled there in order to transform the city into the Empire's capital. The city's densest residential settlements were on the southern slopes of the Golden Horn; meanwhile, Greek and Armenian neighborhoods were located along the Marmara's shores. The initial Muslim settlement of Bakırköy is known to have begun in the 17th century, as evidenced by the construction of the Çarşı Mosque and the first Muslim burials in the graveyards dating to this period (Belge, 1993).

In the 18th century, an Armenian director managing the Baruthane-i Amire (the area where today's Ataköy neighborhood is located) within the boundaries of Bakırköy attracted the Armenian population from Anatolia (Koçu, 1944). Moreover, after the 1894 Istanbul Earthquake, Armenians whose homes were damaged in the historic city center chose to live in detached houses in Bakırköy, which offered ample space (Alus, 1995).

The opening of the Rumelia Railway in 1872 and the subsequent train station in Bakırköy brought Muslim families, as well as a few Jews and Levantines, leading to the emergence of a cosmopolitan population in the area, similar to Yeşilköy (Tuna, 2000).

Between 1830 and 1914, the Ottoman population censuses provided clear information regarding ethnic diversity. Ethnic origins were defined as Muslims, Greeks, Armenians, Jews, Greek/Armenian Catholics, and Protestants (Karpat, 2010). During that period, 5% of Istanbul's population resided in Makriköy, with Muslims constituting 62% of Makriköy's population and approximately 37% being Armenians and Greeks. The harmonious coexistence of Muslims, Greeks, Armenians, and Jews in the area until the 1960s is documented in the books of Turgay Tuna and Selçuk Erez.

Table 1 Ottoman Population 1830 – 1914 (Source: Kemal H. Karpat, Osmanlı Nüfusu 1830-1914, İstanbul 2010, s. 356 – 357)

Ottoman Population 1830 - 1914								
	Population							Total population
	Muslims	Rum Greeks	Armenians	Jews	Greek Catholics	Armenian Catholics	Protestants	
Makriköy	28967	11221	5734	364	46	220	6	46558
Istanbul	560434	205375	72962	52126	387	9918	1213	902415

Between 1914 and 1965, the ethnically heterogeneous structure of Istanbul gradually became more homogeneous. During these years, the Muslim population increased from 61% to 93% (Mazman, 2015). Following World War II, in the 1950-60 period, Prime Minister Adnan Menderes prepared a comprehensive development project. When a large population of poor, landless, uneducated, and politically unaffiliated rural people began to move to the city center, they started to exert their influence through the electoral process. This led to the population in the city center moving west to more prestigious areas in the Bakırköy – Yeşilköy region (Kuban, 1996).

The political changes and the subsequent emigration have significantly reduced the ethnic diversity in Bakırköy. Although the social structure of Bakırköy varies at the neighborhood level, it can generally be described as having a high level of education and income, with a low housing density.

2.4. Demography and Social Structure

Between the 1927 census and 1950 census, the population of Istanbul increased from 806,863 to 1,166,477, while the population of Bakırköy rose from 23,732 to 42,956. When comparing the population growth rates, Istanbul's was approximately 45%, whereas Bakırköy district's was about 81%. Since the industrialization in agricultural production that occurred after the 1940s, the introduction of machinery has led to a significant increase in output. The technological change in agricultural production took place after the 1940s. While the introduction of machinery led to a significant increase in agricultural output, the reorganization of the agricultural sector according to market conditions resulted in the population, detached from the land, accumulating in cities (Kılınçaslan, 1981).However, the central government's move to support the national bourgeoisie in terms of Istanbul's industrialization and urbanization potential after 1950 constituted another driver of migration to cities (Özbay & Yücel, 2001). In 1955, while the population of Istanbul reached 1,533,822 Bakırköy's population rose to 107,287. In 1957, Zeytinburnu district was separated, and by 1960, the population growth rate in Bakırköy had decreased compared to the previous five-year period. With intense migration to the city, the state's inability to meet the housing needs in a planned manner led to a rapid increase in illegal squatter settlements. In this process, the rapid increase in construction in the Zeytinburnu district, and the observed increase in its population after separating from Bakırköy, can be considered one of the main reasons for the decline in Bakırköy's population.

Table 2 Population Data for Bakırköy and Istanbul from 1927 to the Present

Year of Population	Total Population (ISTANBUL)	Population Growth Rate	Total Population (BAKIRKÖY)	Population Growth Rate	Ratio of District Population to Provincial Population
1927	806.863		23.732		
1950	**1.166.477**	**44,57%**	**42.596**	**79,49%**	**3,65%**
1955	1.533.822	31,49%	107.287	60,30%	6,99%
1960	1.882.092	22,71%	102.617	-4,35%	5,45%
1980	**4.471.890**	**137,60%**	**882.505**	**760,00%**	**19,73%**
2000	**10.018.735**	**124,04%**	**208.398**	**-76,39%**	**2,08%**
2023	15.655.924	36,01%	220.476	5,80%	1,41%

Following the intense migration that started in the 1950s, the population of Istanbul by the 1980 census had increased from 1,166,477 to approximately 4,471,890. Bakırköy's population increased from 42,596 to 882,505; its proportion within the Istanbul population rose from 3.65% to 19.73%. As of 2023, while the population of Istanbul continues to grow, no significant differentiation is observed in the population of Bakırköy district. This situation indicates that the spatial growth of the city and the distribution of its population are occurring in a heterogeneous manner across different districts.

In the 2000 census, Bakırköy's population experienced a significant drop due to the separation of the Küçükçekmece, Bahçelievler, Bağcılar, and Güngören districts. The change in the socio-economic structure after 2000 has been interpreted through the lens of social rank and urbanization–specifically between the years 2000 and 2018–with a detailed examination to follow on one of the case studies, the Ataköy neighborhoods.

2.4.1. Method

We used mixed method in this research including historical cartographic analysis, qualitative analysis at macro level and quantitative analysis at micro level. We adapted Shevky and Bell's social area analysis approach to create social rank index and urbanization index for micro analysis. The method of the following section 3 is qualitative analysis and historical cartographic analysis.

Table 3 Social Rank Index (2000)

District	No.	Neighborhood	Social Rank Indicators			
			Occupation Ratio Standard Score	Education Ratio Standard Score	Property Value Standard Score	Social Rank Index
BAKIRKÖY	1	ATAKÖY 1	66,95	94,27	28,99	63,40
	2	ATAKÖY 2 5 6	100,00	97,94	9,34	69,09
	3	ATAKÖY 3 4 11	93,86	95,10	5,65	64,87
	4	ATAKÖY 7 8 9 10	88,80	95,41	14,86	66,36
	5	BASINKÖY	40,72	77,46	11,07	43,08
	6	CEVİZLİK	19,73	83,10	11,00	37,94
	7	FLORYA-ŞENLİK	44,97	97,69	51,91	64,86
	8	KARTALTEPE	53,28	69,62	26,28	49,73
	9	OSMANİYE	0,00	0,00	11,78	3,93
	10	SAKIZAĞACI	10,65	100,00	2,23	37,62
	11	YENİ	10,80	78,81	0,00	29,87
	12	YEŞİLKÖY	45,83	82,50	100,00	76,11
	13	YEŞİLYURT	44,81	86,53	13,12	48,15
	14	ZEYTİNLİK	48,50	84,44	4,04	45,66
	15	ZUHURATBABA	57,82	88,20	14,48	53,50
	Average of Bakırköy					50,28

The variables constituting the social rank indicators have been evaluated based on the proportion of individuals who are under-educated and working in low-prestige jobs. Moreover, the analysis of the real estate market provides additional indicators. Therefore, those with a low social rank index represent the group with a low level of education, working in low-prestige job groups, and having a low property value.

When examining the data from 2000, it's observed that Osmaniye neighborhood–the only area in Bakırköy district with irregular settlements–has the lowest Professional Status Ratio indicator. The proportion of the population working in low-prestige jobs is above the district average, while the employment rate of women is significantly below the district average. In contrast, the neighborhoods of Ataköy have values much higher than the average, indicating a very low proportion of the population in low-prestige jobs and a very high employment rate among women.

When considering the education rate among adults over 25 years of age–including those who are literate but have not completed any school, and primary and middle school graduates–Osmaniye again has the lowest rate. Sakızağacı (one of the oldest settlements), and Ataköy 2-5-6 neighborhoods along the coast, as well as Yeşilköy, are significantly above the average.

In an evaluation of neighborhoods based on property value rates as an income indicator, Yeşilköy and Florya have the highest values. Sakızağacı, Zeytinlik, and Ataköy 3-4-11, some of the oldest settlements, have the lowest values. When interpreted in terms of income, the highest

income group is in Florya, whereas the areas surrounding the historic city center of Bakırköy consist of neighborhoods inhabited by the middle-income group.

Table 4 Social Rank Index (2018)

District	No.	Neighborhood	Social Rank Indicators			
			Occupation Ratio Standard Score	Education Ratio Standard Score	Property Value Standard Score	Social Rank Index
BAKIRKÖY	1	ATAKÖY 1	40,05	92,13	0,71	44,29
	2	ATAKÖY 2 5 6	100,00	92,50	2,09	64,86
	3	ATAKÖY 3 4 11	40,05	93,35	4,45	45,95
	4	ATAKÖY 7 8 9 10	60,55	94,26	15,29	56,70
	5	BASINKÖY	63,07	80,05	12,54	51,89
	6	CEVİZLİK				
	7	FLORYA-ŞENLİK	40,05	92,30	76,60	69,65
	8	KARTALTEPE	55,58	63,75	27,93	49,09
	9	OSMANİYE	58,68	0,00	17,12	25,27
	10	SAKIZAĞACI	65,46	100,00	0,00	55,15
	11	YENİ				
	12	YEŞİLKÖY	40,05	84,33	100,00	74,79
	13	YEŞİLYURT	40,05	92,12	11,41	47,86
	14	ZEYTİNLİK	40,05	83,05	7,53	43,54
	15	ZUHURATBABA	0,00	84,30	13,01	32,44
	Average of Bakırköy					50,88

When the data from 2018 are examined, it is observed that the average social rank index is generally lower. In particular, there is a dramatic drop in Zuhuratbaba.

Urbanization Indicators are fertility ratio, women in labor force ratio, and single-family detached dwelling units ratio. Standardized values are inversely proportional to real values. When evaluating the urbanization index 2000 data (Table 5), the Ataköy neighborhoods–which started construction after 1957–consist of high-standard and spacious houses, so the standard score value in these neighborhoods is below average. Bakırköy, having an aging population, has low fertility rates. However, since it is more modernized, the number of women participating in the workforce is high. Specifically, in the Ataköy 2-5-6, which has the first mass housing structures, is a neighborhood with a high average age.

Table 5 Urbanization Index (2000)

District	No.	Neighborhood	Urbanization Indicators			
			Fertility Ratio Standard Score	Women in Labor Force Standard Score	Single Family Detached Dwelling Units Ratio Standard Score	Urbanization Index
BAKIRKÖY	1	ATAKÖY 1	86,29	55,35	0,00	47,21
	2	ATAKÖY 2 5 6	100,00	100,00	34,23	78,08
	3	ATAKÖY 3 4 11	96,05	72,69	44,34	71,03
	4	ATAKÖY 7 8 9 10	96,21	81,62	39,93	72,59
	5	BASINKÖY	0,00	18,44	88,46	35,63
	6	CEVİZLİK	97,46	35,59	8,66	47,24

	7	FLORYA-ŞENLİK	54,60	0,00	96,99	50,53
	8	KARTALTEPE	88,19	39,52	63,35	63,68
	9	OSMANİYE	60,92	18,88	100,00	59,93
	10	SAKIZAĞACI	88,38	18,88	34,58	47,28
	11	YENİ	74,08	19,11	26,14	39,78
	12	YEŞİLKÖY	99,64	18,63	58,25	58,84
	13	YEŞİLYURT	79,91	97,22	60,40	79,17
	14	ZEYTİNLİK	98,27	86,75	9,75	64,92
	15	ZUHURATBABA	91,96	27,98	45,06	55,00
	Average of Bakırköy					58,06

When evaluating the data from 2018, it is observed that the general urbanization index average is lower. Due to the inverse correlation among the variables, it can be inferred that the fertility rate has increased and women have been included in the workforce at a higher rate.

Table 6 Urbanization Index (2018)

District	No.	Neighborhood	Urbanization Indicators			
			Fertility Ratio Standard Score	Women in Labor Force Standard Score	Single Family Detached Dwelling Units Ratio Standard Score	Urbanization Index
BAKIRKÖY	1	ATAKÖY 1	44,64	100,00	43,21	62,61
	2	ATAKÖY 2 5 6	9,39	32,27	60,55	34,07
	3	ATAKÖY 3 4 11	42,12	3,66	49,90	31,89
	4	ATAKÖY 7 8 9 10	44,15	4,86	33,93	27,65
	5	BASINKÖY	43,58	28,70	94,22	55,50
	6	CEVİZLİK	76,54			
	7	FLORYA-ŞENLİK	15,19	3,99	100,00	39,73
	8	KARTALTEPE	57,61	31,60	58,65	49,29
	9	OSMANİYE	38,74	23,41	69,69	43,95
	10	SAKIZAĞACI	89,46	58,07	28,53	58,69
	11	YENİ	68,91			
	12	YEŞİLKÖY	62,75	0,00	61,75	41,50
	13	YEŞİLYURT	0,00	22,05	65,60	29,22
	14	ZEYTİNLİK	68,86	8,66	0,00	25,84
	15	ZUHURATBABA	100,00	52,95	38,88	63,94
	Average of Bakırköy					43,38

3. Trajectory of Urban Land Use in Bakırköy

Hebdomon hosted Campus Martis, the largest training ground of the Eastern Roman army, as well as a military port. Campus Martis was located within the present-day boundaries of Veliefendi Hippodrome (Tuna, 2000). As recently as the 1950s, this area contained farms, dairies, vineyards, and fig orchards and was a resort and a picnic destination. Following modernization post-1950, large tracts of land were planned and developed as residential areas, transforming from the existing 1-2 story wooden houses to apartment buildings. After the 1980s, neoliberal planning policies created consumption-oriented spatial areas, and post-2000, high-rise towers, hotels and conference centers were constructed in these areas.

Although its military identity, distance from the walled city, and presence of a railway once made it a popular region for industrial facilities, recent policies and the decentralization of industry to the city outskirts now primarily define it as a residential area. Breaking points in Bakırköy's historical

process, including transportation, changes in spatial areas, characteristics of the periods, and functional changes of structures, have been considered in a general framework with a timeline specific to the periods as indicated in Figure 1.

When defining spatial changes within the studied periods, shifts have been identified through macro-scale economic, socio-cultural, and state policies (relationship between local-central government). The impact of transportation investments on spatial formation has also been described. In this context, the reflection of changing economic policies on space, the changing definition of space with the concept of planning, and the transformation in the social structure have been defined. Following these explanations, cases have been identified to further explore the changes over the studied periods.

3.1. Pre – 1923's Spatial Change

In the 16th century, Evliya Çelebi, who is known for his Seyahatname, mentions the existence of 'İskender Çelebi Farm' in Makriköy, known for its resort features, describing it as 'the most famous among the vineyards and gardens belonging to the sultans among the people' (Koçu, 1944). In 1698, a fire at the Şehremini Gunpowder Factory in Istanbul led to major explosions, and it was decided to move gunpowder production outside the city walls. 'İskender Çelebi Farm' was chosen as the new location. The decision on the location took into account the availability of water from the Siyavuşpaşa stream running through the area and the ease of material supply by sea (Doğaner, 2012). After the establishment of facilities in the area, gunpowder manufacturing began in 1701 (Koçu, 1944). Today, remnants of these two-hundred-year-old facilities are scattered along the coastline and within the Ataköy neighborhoods. The gunpowder facility and alike, have given Bakırköy an industrial identity, furthermore, the housing needs of those working in the industry have influenced spatial growth towards the perimeters of the historic settlement area.

In 1871 with the construction of the railway connection and the train station, settlements began on the north side of the railway line; Muslims built mansions and pavilions towards İncirli vineyards, laying the foundations for today's İncirli road stretching to the D-100 highway.

After the proclamation of the Second Constitutional Era in 1908, the Mapping Commission was reorganized and created the map of Makriköy in 1909 (Ülkekul, 1998, 19-39). Makriköy maps were prepared by Necip Bey, who worked in the Şehremaneti between 1914 and 1918. Kartaltepe, located north of the historical settlement, can be identified via this map (Figure 3). Contrary to the agricultural lands on the south side of the railway being opened for development, the 1909 maps by the Erkan-ı Harbiye Department show a denser housing. The area consisted of residential and industrial facilities, alongside agricultural lands (vineyards, fig orchards, etc.) and farms (Osmaniye, İskender Çelebi).

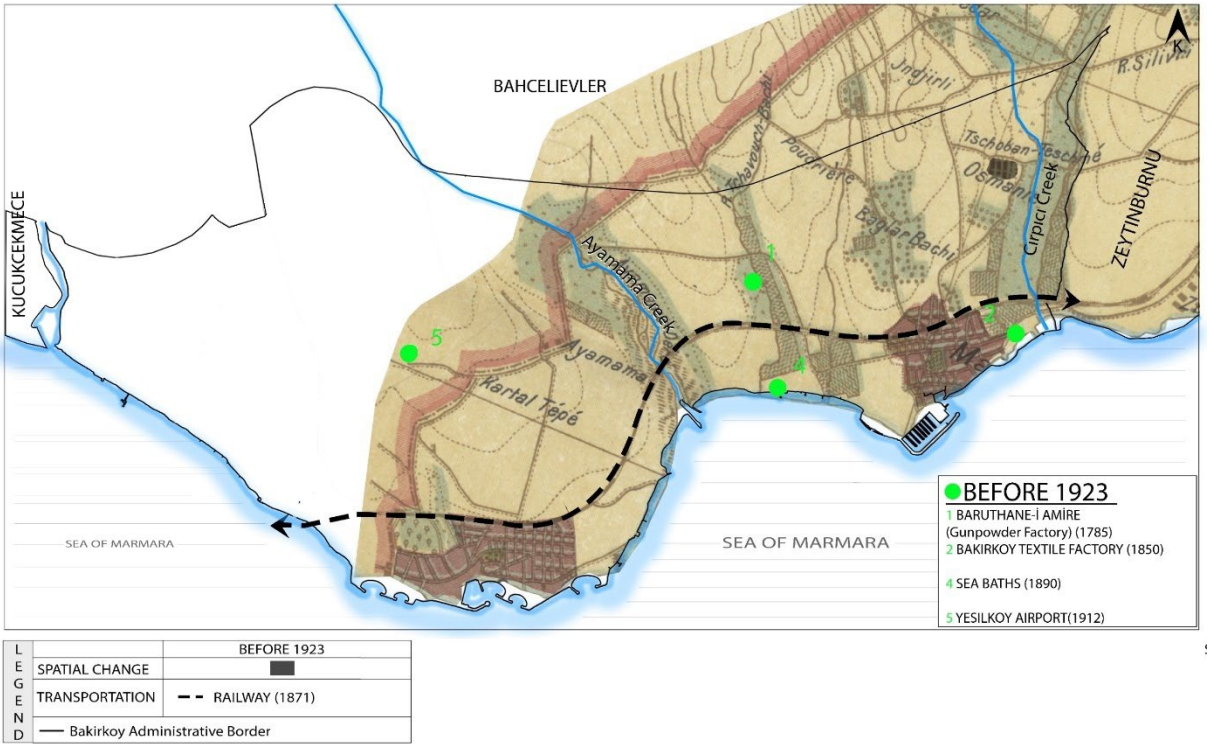

Figure 3 Landuse change before 1923 (Source of the map base: Necip Bey 1908, Istanbul Metropolitan Municipality, Atatürk Library)

Documents in the Prime Ministry Ottoman Archives on Makriköy provide insights into urban development, including records about new lands opened for settlement to accommodate immigrants from the Balkans and the increasing population. Both in the Byzantine and Ottoman eras, the empires' highest quality building stone quarries were located in the extensive lands to the northeast of Bakırköy. Osmaniye neighborhood, close to the northeastern boundary within Bakırköy, was a settlement of 35 households where immigrant families settled in 1895.

3.2. Spatial Change During 1923 – 1950 the State-Led Economic Development

To understand the economic development process during this period, this study is going to divide it into two distinct phases. The first phase, from 1923 to 1929, spans from the proclamation of the Republic to the onset of the Great Depression worldwide in 1929. The İzmir Economic Congress of 1923, aimed at defining an economic development strategy, is significant in the economic and social history of Turkey. The parliament, attended by delegates representing merchants, farmers, industrialists, and workers, facilitated a class-based societal organization in Turkey, a phenomenon not seen again in Turkish history (Bahçe & Eres, 2017). The second phase from 1930 and 1950, saw the state taking an investor role in economic policies. In 1932, the State Industry Office and the Industry and Loan Bank were established to support the industry, later merging under the name Sümerbank in 1933. The first Five-Year Industrial Plan was implemented in 1934, with Sümerbank being granted the execution authority. However, World War II caused a long hiatus in state-planned industrialization. To cover decreasing public revenues and increasing military expenses, first, the 'Wealth Tax,' and then the 'Agricultural Products Tax' were introduced, with the former significantly sourcing from wealthy minorities (Boratav, 2009).

The selection of industrial areas and the presence of railway connections have led to the spatial development of the ancient settlement. The Bakırköy residential centers developed between the coast and the railway, particularly in today's Zeytinlik and Cevizlik neighborhoods. The 1934 map produced by the Istanbul Municipality shows the expansion of the Bakırköy residential area towards the current Yeni and Sakızağacı neighborhoods (Istanbul Maps City Guide, 1934) (Figure 4).

Until the late 1940s, there was little significant internal migration within Turkey from the founding years of the Republic; however, during World War II, some residents of the European side sold their lands at below-market values out of fear of German occupation, prompting a migratory movement to the Anatolian side (Kurtuluş, 1999).

A chronological evaluation of maps shows that in the early 20th century, Bakırköy transitioned from a small coastal resort town into an urban settlement through continuous development. Figure 4 maps out its spatial evolution from 1923 to 1950, using the 1934 City Guide with maps as a reference point. These maps were derived from the work of Prof. H. Prost, who served as the Urbanism Specialist at the Istanbul Municipality between 1936 and 1950.

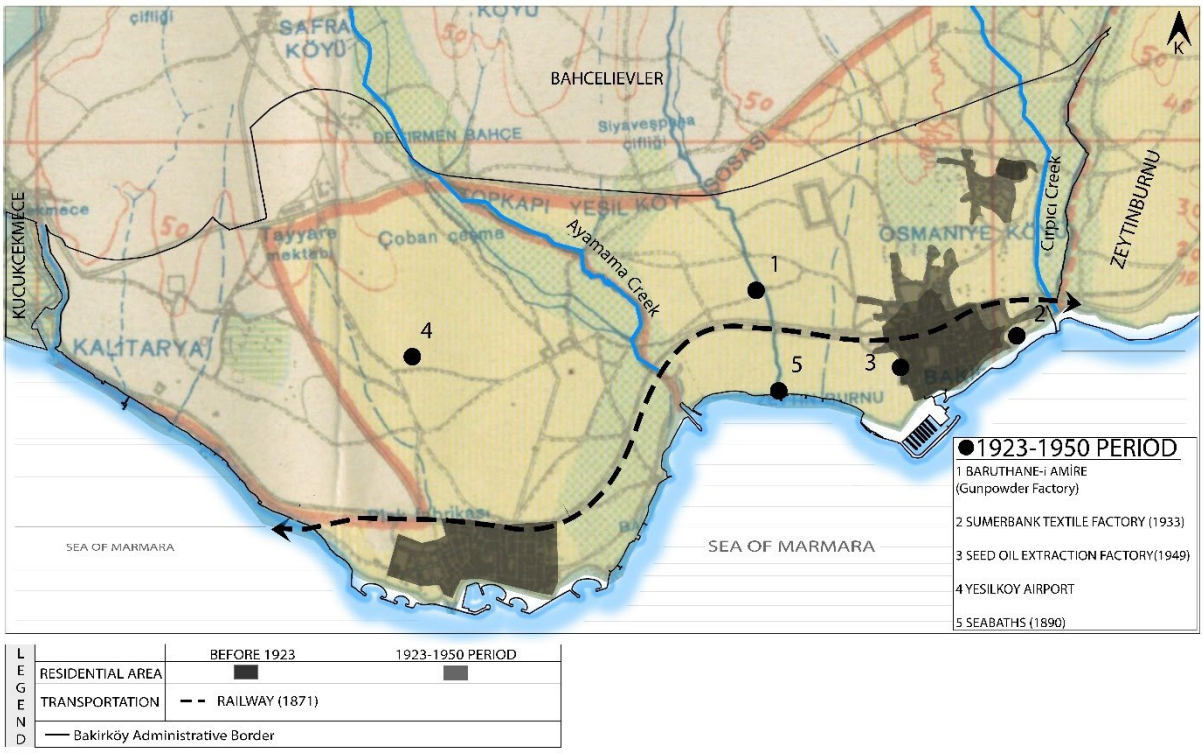

Figure 4 Spatial change during 1923 – 1950 (Source of the map base: City Guide, 1934, Istanbul Metropolitan Municipality, Atatürk Library)

The maps documenting Prost's work reveal that beyond the city walls, past Kazlıçeşme, stood several industrial facilities: the Baruthane-i Amire gunpowder mill, Bakırköy Textile Factory, an oil extraction plant processing seeds, and stone quarries. The primary settlement areas were the towns of Bakırköy and Yeşilköy. The stone quarries around Osmaniye continued operating until the 1950s, after which point they ceased activities.

During this period, the spatial changes can be summarized as an expansion around the historic city center and the construction of housing to accommodate workers employed at the industrial facilities.

3.3. Spatial Change Due to Industrialization and Rapid Urbanization in the Liberal Era from 1950 to 1980

In 1935, M. Wagner states that it is necessary to move industry out of the city, but in 1939 H. Prost continues the development of the industrial settlements of the Golden Horn, which started in the last century, within the plan. On April 27, 1947, according to the Istanbul's Municipality's 'Instructions for Istanbul Industrial Zones' published in newspapers, heavy industrial zones were designated between Yedikule and Bakırköy. The second decision regarding the areas where the industry would be located was stated in the report of the relevant commission published in newspapers on August 4, 1949. According to the report, Istanbul's heavy industrial zones were designated to be outside Bakırköy, around Yeşilköy, Çekmece, and Zeytinburnu (Kılınçaslan, 1981).

The 1950s witnessed a surge in urban population growth and consequent rapid urbanization, resulting in a severe housing shortage that gave rise to unplanned developments such as squatter settlements (Tekeli & İlkin, 1987). Beginning in that decade, Turkey's economy underwent a multi-faceted, structural shift adopting policies that favored entrepreneurship and an open market orientation. In the post-World War II era, Bakırköy emerged as a significant urban development area, growing in parallel with the privately-led industrial expansion. However, after the 1960 coup d'état and the enactment of the 1961 Constitution reestablishing the social state ideal, national development efforts refocused on societal objectives (Tekeli & İlkin, 1987).

In 1952, the Istanbul Municipality formed the 'Advisory Committee,' composed of faculty members from the Istanbul Technical University and the urban planning department of the State Academy of Fine Arts. This committee identified industrial establishments, marked them on a map, and in 1955, approved an industrial zones plan that determined the areas designated for industry (Özler, 2007). A planning decision designated the Zeytinburnu district, located on the eastern border, as a medium and heavy industrial zone. Throughout its historical development, industrial areas continued their site selection tendency along the Çırpıcı Creek axis; the Vita/Sana Margarine Factory, Kartaltepe Textile Factory, Aksu Yarn Factory, and the Leather Factory all commenced production activities in the 1950s within this corridor.

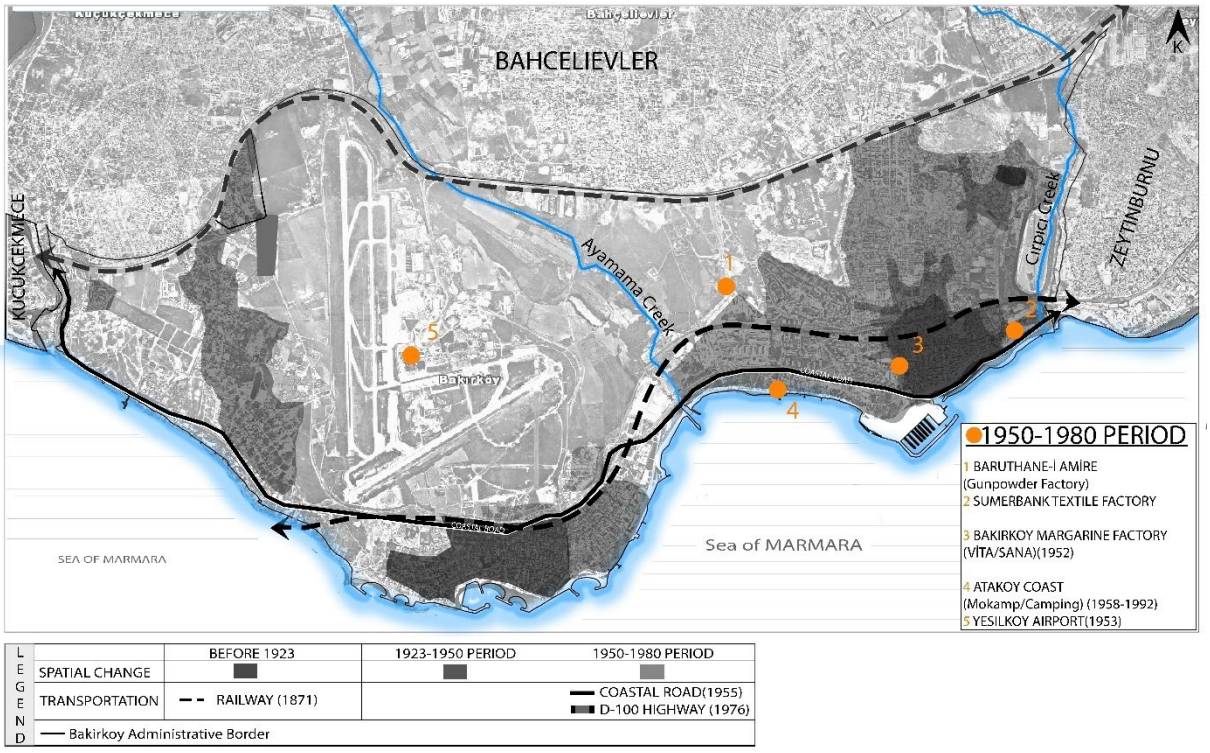

Figure 5 Spatial change from 1950 to 1980 (Source of the map base: City Guide, 1980, Istanbul Metropolitan Municipality)

With urbanization accelerating from the 1950s onward, Bakırköy's population surged (Table 1), prompting the expansion of inhabited areas. In the post-World War II period, the land housing the then-idle gunpowder factory was sold to Türkiye Emlak Kredi Bankası in 1955. The Ataköy/Baruthane Project, designed and implemented by Türkiye Emlak Kredi Bankası A.O., represented an innovative model for large-scale mass housing production at that time.

In 1957, Prime Minister Menderes opened a new coastal road between Sirkeci and Bakırköy, part of which was built by filling in the sea. The area west of Ataköy neighborhood within Bakırköy district, now known as Istanbul Atatürk Airport in Yeşilköy, was renovated to international standards between 1947 and 1953 (Kuban, 1996).

Until the 1950s, Bakırköy maintained its resort characteristics, preserving its traditional structures and street texture. In the 1960s, while İstasyon Caddesi and Ebuzziya Caddesi, leading from the train station to the shore, were widened, some historical buildings were expropriated and demolished (Doğaner, 2012).

The migrant workforce lacked the necessary skills and resources for industrial or manufacturing employment, leading to unemployment on one side and the development of informal economic sectors on the other. This development process, characterized by insufficient infrastructure, gained significant momentum in the 1950s and resulted in distorted, unplanned urbanization, further exacerbating the rate of population increase (Tekeli, 1977). In the northeastern district of Bakırköy, the area around Osmaniye Neighborhood also witnessed an expansion of squatter settlements during this period (Eres & Aydın, 2018). On the other hand, to meet the increasing housing demand, small-scale construction contractors struck deals with homeowners in established neighborhoods: they would replace the existing one- or two-story wooden and masonry houses with multi-unit apartment buildings, providing the homeowners with flats in the new structures (Kurtuluş, 1999).

The establishment of the Ministry of Development and Housing in 1958 and the adoption of a new constitution in 1961, which included provisions emphasizing social rights and welfare, led to significant changes, particularly in housing policies. During this period, 'state-supported housing' projects re-emerged. The Five-Year Development Plan of 1963, which resulted in the establishment of the State Planning Organization, contained specific targets for housing acquisition. This plan and subsequent ones aimed to balance housing needs with resources, develop standards for the production of affordable housing, create regulations to address the squatter housing problem, reduce state investments in this area, and increase the role of cooperatives, private investors, and local governments in housing production and financing. Moreover, the Condominium Law enacted in 1966 introduced legal, economic, and social regulations to support these policies.

In the mid-1970s, during the preparation of the Fourth Five-Year Development Plan, it was determined that the housing deficit was increasing annually. In these years, urban settlement areas have seen the creation of low-quality physical environments by private contractors, despite adherence to zoning plans and regulations. All these changes in general policies triggered the process that led to the formation of the Ataköy neighborhoods, where large-scale housing investments took place on the Baruthane land in Bakırköy, which will be explained in detail later.

3.4. Spatial Change Produced by Neoliberal Policies from 1980 to 2000

Since the 1970s, neoliberal economic policies have begun to create significant transformations in the urban-metropolitan areas of both advanced industrialized countries and late-industrializing countries around the world (Kurtuluş, 2005). Following the 1973 oil crisis, technological changes in the transportation, communication, and information sectors have led to diverse spatial reflections, ranging from production methods to social-cultural behaviors and living habits, demonstrating their ability to emerge and reproduce themselves. While the industrial function, which constituted the primary power center of the previous period, has shown a tendency to move from city centers to the periphery and then out of the city, the areas vacated by industry have quickly become targets for service sector structures and housing projects (Akın, 2011).

This period also witnessed significant and drastic transformations in Turkey, both politically and economically. Following the 1980 coup d'état, the September 12 military regime implemented legal regulations that would commodify the entirety of the urban area and expose it to the free market economy. The use of public resources was reorganized to prioritize the interests of private capital.

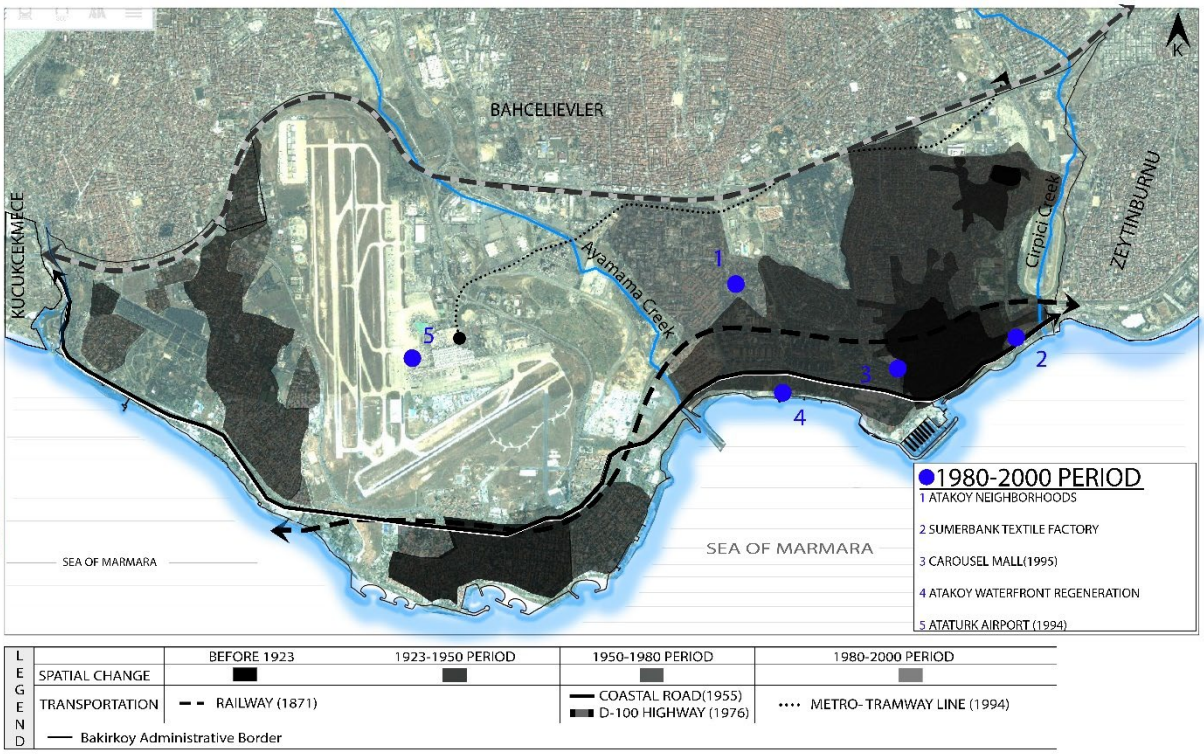

Figure 6 Spatial change from 1980 – 2000 (Source of the map base: City Guide, 2006, Istanbul Metropolitan Municipality)

The Urban Planning Law No. 3194, which came into effect in 1985 and is still in force, has granted local governments extensive powers regarding urban planning applications. During this period, the urban development and formation were largely unaffected by zoning plans, leading to a general amnesty for unauthorized constructions in 1983 and a series of amendments made until 1989 (Unsal, & Turk 2014). Urban Regeneration Plans, defined by amnesty laws, were created; ignoring the need for amenities, a transformation from squatter houses to apartments emerged, and this renewal occurred at the individual building scale, driven by landowners and contractors (Turk, & Korthals Altes, 2013).

When the spatial development after 1980 is defined specifically for Bakırköy, there is construction up to the D-100 highway, which forms the northern boundary of the district, connected by the roads of the Bosphorus Bridge built in 1973. With the improvements made in public transportation and new lines, the district has become more accessible, and construction has been completed in a spatial sense, except for public spaces.

3.5. Spatial Change Produced by Post – 2000 Globalization Policies and Government – Private Sector Partnership

In the 2000s, the state's role favoring capital owners in the process of reorganizing (redistributing) property in urban spaces became evident through widespread urban regeneration projects. When evaluated from a planning perspective, it is observed that the central government in Turkey tends to implement special-purpose plans, indicating a trend towards utilizing planning authority for specific objectives (Unsal & Turk, 2014). It is a period when local governments accelerated collaboration with the private sector and the term ‘transformation’ was strategically defined in the spatial context.

The 2005 Municipal Law No. 5398, Article 73, granted local governments the authority to designate urban renewal areas. In 2010, the scope of Article 73 of Law No. 5398 was expanded. According to the law, municipalities can designate an area as an urban renewal area regardless of whether there are buildings on it or not, and can define the floor area ratios and height limits for the area. The 2012 Law No. 6306 on the Transformation of Areas Under Disaster Risk granted the

central administration the authority to designate urban renewal areas and implement projects in these areas. Implementation in these areas is generally carried out by TOKI (Housing Development Administration of Turkey). This is because TOKI's resources were increased with Law No. 4966 in 2003, allowing it to carry out profit-oriented projects (Unsal & Turk, 2014). The transformation projects implemented during this period necessitate a new form of governance where local government forms partnerships with the private sector, either directly or through joint ventures, taking on entrepreneurial roles (Kuyucu & Unsal, 2010).

Privatizations facilitated the transformation of large tracts of land, which had previously been the subjects of public investments throughout history, into investment spaces for the private sector. Functional transformations in the areas to be discussed in the case study have created spaces that encourage consumption in newly produced areas. Areas where the state once built production facilities have been transformed into luxury housing and tourism areas for private sector profit. This transformation has had a negative impact due to a fragmentary planning approach, which hinders the development of transportation axes serving the city, the definition of city centers, and the appropriate direction of local investments.

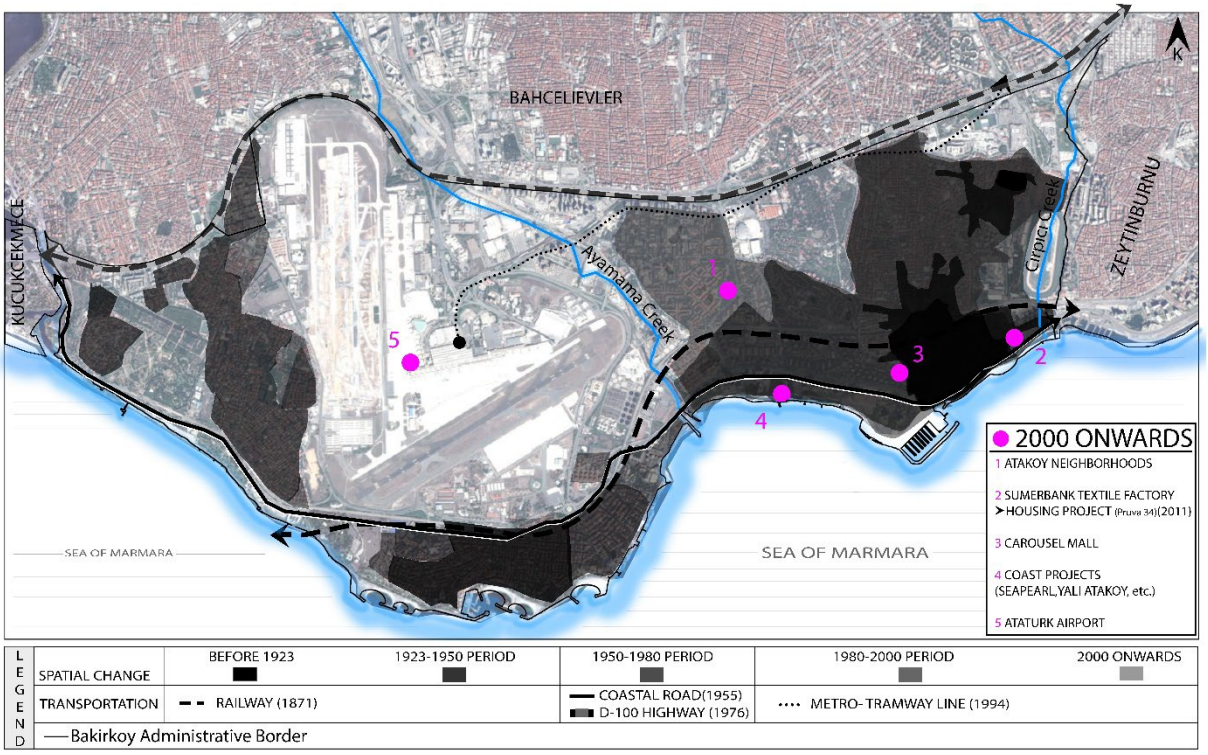

Figure 7 Spatial change post – 2000 (Source of the map base: City Guide, 2024, Istanbul Metropolitan Municipality)

Summarizing all these processes, the spatial transformation process in Istanbul, ongoing since the second half of the 19th century, occurs at varying speeds and exhibits different characteristics, depending on a range of factors. It is evident that economic policies, which have created radical changes in the social structure and play a dominant role as in many metropolitan areas around the world, are also observed in Istanbul. These spatial transformation processes are dependent not only on national development strategies/policies, but also on the roles the city has historically taken on both nationally and internationally, as well as the preferences, powers, and possibilities of civil or public actors in different periods. These dynamics, emerging at different scales, blend with the potentials existing or created at the local level, transforming the urban space and revealing its new macro-form (Kurtuluş, 2005).

Istanbul is a city that has experienced the Roman, Byzantine, and Ottoman empires, each period reflecting its impact on the space in economic, political, and cultural terms, both socially and physically. While the modern planning action that began in the second half of the 19th century continues, the urban accumulations brought by the Ottoman period have merged with the planning

approach of this period, resulting in the first urban plan. After 1950, the country experienced significant change in every aspect. The year 1950 marks a period of socio-economic and societal transformations. Radically altered economic policies disrupted the political authority-market balance mechanism, causing rapid change in the social sphere. In the 1980s, spatial planning began to lose its holistic content, which considered public interest. Spaces lacking public cohesion and disconnected from each other began to emerge. Today, increasing social and economic polarization leads to the formation of private, gated communities, creating a social structure and living spaces disconnected from each other and their surroundings, undermining public life and public space.

In the following section, changes in selected case studies in Bakırköy are examined through the lens of different periods. The selected case studies reflect the characteristics of their respective eras, detailing different functions (recreation, transportation, production) and the varying legal frameworks and collaborations in mechanisms transitioning from public to private.

4. Changes in Selected Case Studies in Bakirköy Through the Lens of Different Periods

To define the spatial development within the boundaries of the Bakırköy district, numerous maps produced throughout history have been examined, and new maps have been created. In these maps, five selected sample areas have been closely examined individually: the Baruthane-i Amire, the Bakırköy Textile Factory, the Oil Extraction Factory from Seeds, the airport lands, and the area declared as the Ataköy Tourism Area along the southern part of the coastal road.

These areas were selected because they have undergone functional changes and transformations from the past to the present, and their existing identities in the local context have been completely altered due to political decisions.

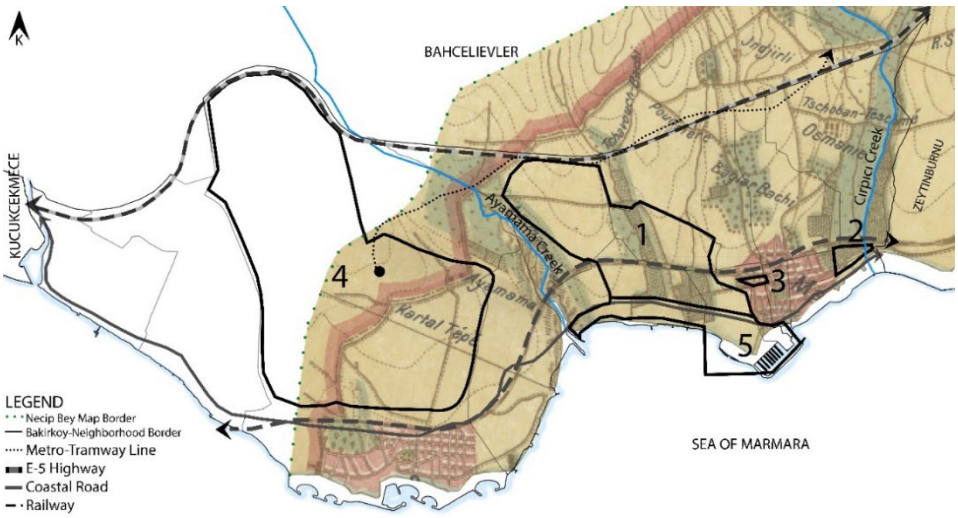

Figure 8 Selected cases as a sample of spatial change (Source of the map base: Necip Bey 1908, Istanbul Metropolitan Municipality, Atatürk Library)

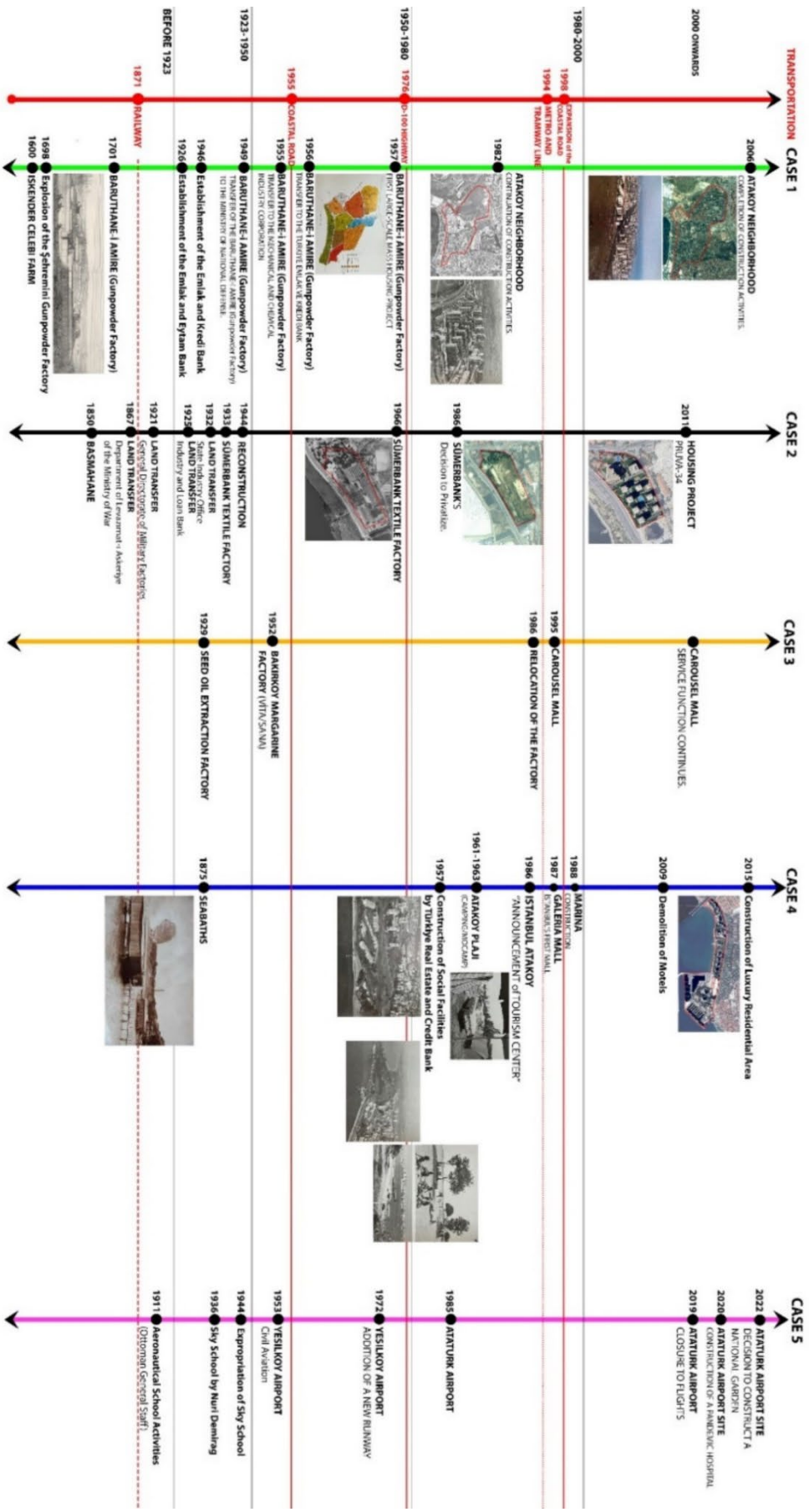

Figure 9 Breaking points in historical processes and spatial changes in sample areas (Source of Photos: Istanbul Metropolitan Municipality City Guide and Atatürk Library)

4.1. Case 1: From the İskender Çelebi Farm Supplying Food for All of Bakirköy to the Ataköy Residential Neighborhood

After Istanbul was captured by the Turks during the rise of the Ottoman Empire, İskender Çelebi, one of the treasurers of Suleiman the Magnificent, became one of the famous names to make history in Bakırköy. Çelebi bought the land and he constructed a beautiful mansion surrounded by large fruit gardens, vegetable gardens, and flower beds for himself. After his death in 1535, these gardens were historically referred to as the İskender Çelebi Farm and İskender Çelebi Recreation Area (Tuna, 2000).

In 1698, following the explosion and destruction of the Şehremini Gunpowder Factory, which supplied the army's ammunition needs, a large part of the district was blown up. To prevent such great dangers in the future, it was considered to relocate the gunpowder factory outside the city center. The most suitable location found was the land of the old İskender Çelebi Farm in Makriköy, which was a property of the state.

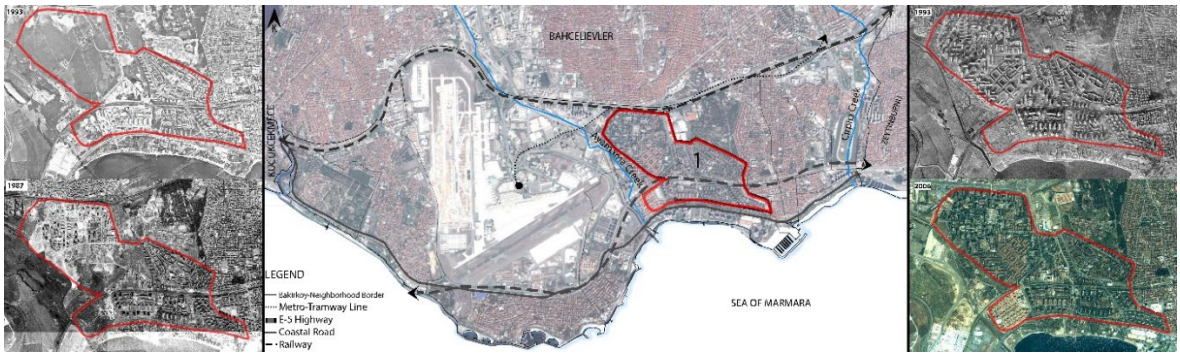

Figure 10 Case 1 spatial change during periods (Source of the map base: City Guide, different years, Istanbul Metropolitan Municipality)

Subsequent legislation laid the groundwork for the development of what are today the Ataköy neighborhoods. The Real Estate and Orphanage Bank, established in 1926, was renamed Türkiye Emlak ve Kredi Bankası (Turkey Real Estate and Credit Bank) in 1946 and was given expanded responsibilities and authority. The Building Construction Encouragement Law of 1948 facilitated construction activities on Treasury lands; however, it remained insufficient for housing production as it only provided land procurement authority. The 1954 amendment to the Land Registry Law, which allowed for condominium ownership, made it possible to use mortgage housing loans for apartment flats in multi-story blocks on the same land (Güvenç & Işık, 1999; Yöney, 2018). In 1955, the facilities on the gunpowder factory site, which were no longer operational, were transferred to the Machinery and Chemical Industry Corporation.

The approximately 375-hectare area known as the gunpowder factory site, located on Istanbul's western development corridor, was purchased by Emlak Kredi Bankası in 1955 (Fifty Years, 1973). The area is located on the coast of the Sea of Marmara and near Yeşilköy Airport. The Sirkeci – Florya Coastal Road, D-100 Highway, and the existing railway line, constructed between 1956 and 1957, provided convenient transportation infrastructure. Construction activity for Ataköy neighborhood I. Section began in 1957 after the plans were prepared and approved. The area, designed as a satellite city, was planned in 10 neighborhoods. Buildings of different sizes but with a similar architectural language, reflecting modernist planning and design principles in every detail including health, environment, transportation, commerce, education, and recreational infrastructure and facilities, were placed within extensive green areas.

In 2001, with Law No. 4684, Emlak Kredi Bankası was closed; all housing production activities were transferred to the Housing Development Administration (TOKI) in 2002. Following the bank's closure, the VI. Section (Ataköy Mansions), implemented by TOKI between 2004 and 2006, stands out from the rest of Ataköy neighborhood in terms of spatial and architectural qualities. As a result of the rapid increase in rents and real estate prices since 2001, the area reached an extreme point

in terms of luxury and expensive housing construction, moving away from mass housing (Yöney, 2018).

4.2. Case 2: From the Ottoman – Period Basmahane Factory to the Luxury Housing Project Pruva 34

In 1850, Basmahane was established as a private enterprise in Makriköy by Ohannes, to provide clothing for the military. After ten years of operation, the Basmahane was unable to continue its work due to lack of protection and European competition. In 1860, the enterprise was transferred to the Treasury-i Hassa and after six years of operation under this administration, it was transferred to the Levazımat-ı Askeriye Department of the Ministry of War in 1867 and only military-type cloth and fabrics were woven for the needs of the army.

After being transferred to the General Directorate of Military Factories in 1921, the Basmahane-i Amire facilities were reopened in 1924 with increased production capacity following repairs and renovations. In 1925, the institution was transferred to the Bank of Industry and Maadin, and in 1926, steam machines were removed and replaced with electric machines. The facilities were transferred to the Office of Industry in 1932 and to Sümerbank with the establishment of Sümerbank in 1933. In 1933, all production was transferred from hand looms to machines. The Sümerbank facilities, also known as Bakırköy Textile Factory, became an important business area for Bakırköy as well as an important supplier of fabric for the state.

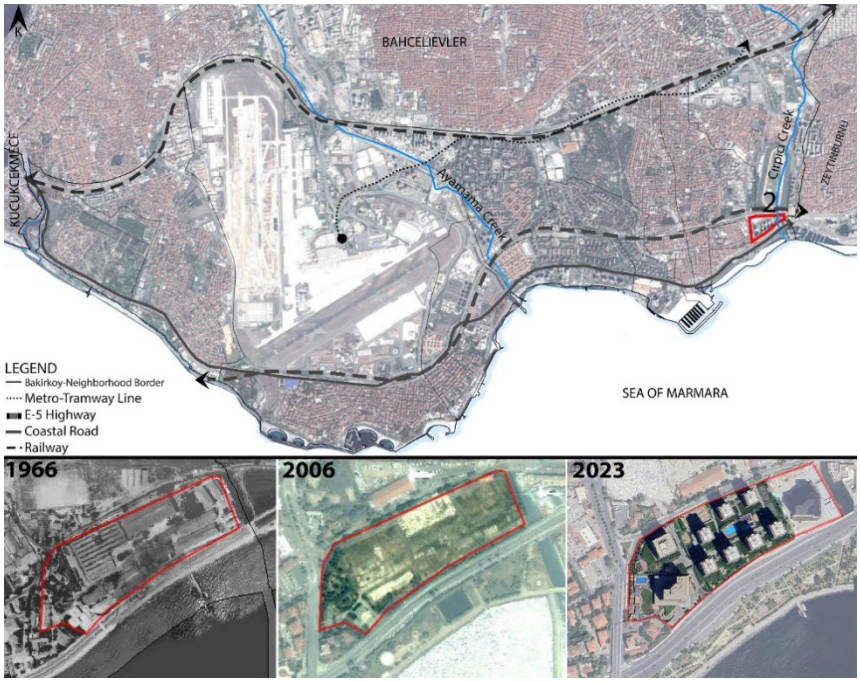

Figure 11 Case 2 spatial change during periods (Source of the map base: City Guide, different years, Istanbul Metropolitan Municipality)

In 1944, new facilities were built to replace the old facilities of the Bakırköy Cotton Weaving Factory, which were designed by Sedad Hakkı Eldem. Until its privatization in 1986, these facilities were continuously renewed to meet production needs (Köksal, 2005, 61). The Sümerbank factories in Bakırköy are one of the most important state sponsored contributions of the Republican era. A bank and a textile manufacturer at the same time, the institution was named by Atatürk. Between 1930 and 1940, the institution continuously increased its capacity by following technological developments and became a part of the modern production model that the Republic was trying to create.

When the location of the weaving industry in Istanbul is evaluated spatially, it is seen that it is located in Bakırköy (Aksu Street). The enterprises located in Bakırköy represent a large part of the

Istanbul weaving industry in terms of the number of workers, investment value, added value and production (Tümertekin, 1997).

In 2011, a private company purchased the factory land as a result of privatization and started the construction of a hotel and residences in the place of the factory since the land was zoned for tourism and housing. The 22-story, ten-block complex is located on the Bakırköy coast in front of the Veliefendi Hippodrome.

4.3. Case 3: From Seed Oil Extraction Factory to Carousel Shopping Center

As part of the planned industrial development policies, the Seed Oil Extraction Factory was established by the state in 1929. In 1953, its production function was maintained and it was purchased by a private company, Unilever, becoming the Bakırköy Margarine Factory (Vita, Sana). The factory was moved to its new location in Çorlu in 1986, and production was halted in 1988.

In 1989, the coastal line declared as the 'Ataköy Tourism Center' by the Council of Ministers in order to make a zoning plan change. The boundaries were expanded in 1995 to include this area as well. Following the zoning plan change that introduced a commercial function. Carousel Shopping Center and Acıbadem Hospital which were built in 1995 by the private sector.

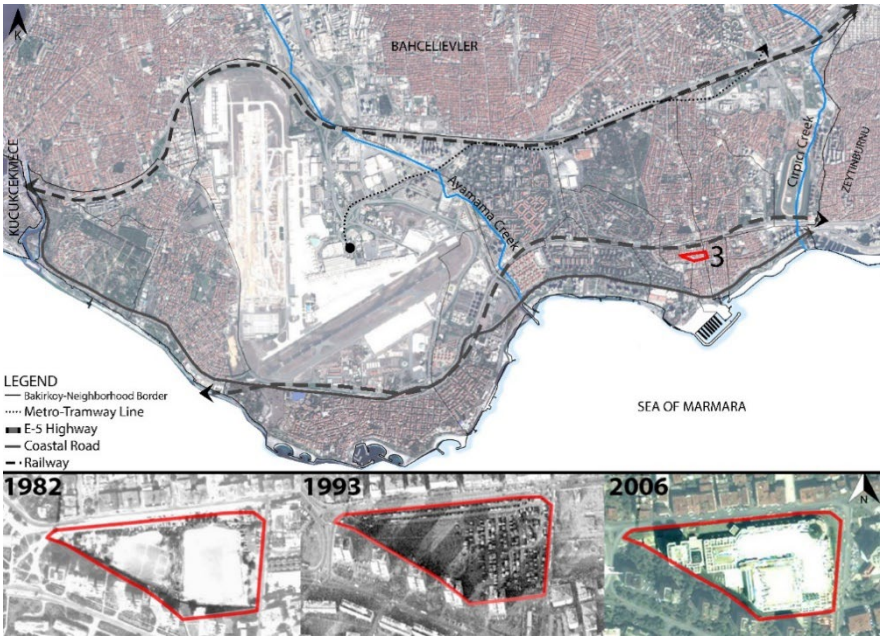

Figure 12 Case 3 spatial change during periods (Source of the map base: City Guide, different years, Istanbul Metropolitan Municipality)

4.4. Case 4: From Historic Sea Baths to Luxury Housing Projects (Waterfront Regeneration)

In the late 19th and early 20th centuries, the Bakırköy Pier served as a stop for the city line ferries of İdare-i Mahsusa, which operated round trips from Bakırköy to Yeşilköy (Tuna, 2000).

On the other hand, starting from the Ottoman period, going for a swim was an important habit in daily life. Entering the sea was accomplished through sea baths from the 17th century until the beginning of the 20th century, and from the first quarter of the 20th century onwards, people started to enter the sea from beaches (Yağan, 2018). Sea Baths is a place where people swam from a pool-like space in the middle of a shed-like structure surrounded by wooden curtains, which is reached from the shore with a long pier, and also called ‘sea baths’ in the old term, which functions as a kind of beach between four wooden walls (Tuna, 2000). In 1875, ‘Regulation on Baths’ was prepared by Istanbul Şehremaneti, and it is mentioned that there are sea baths in Makri Karyesi and Ayestefanos, one for ‘zukura’ (men) and one for ’inas’ (women) (Erez, 2009).

The first facilities completed within the scope of the project, prepared and approved after the transfer of the Baruthane land to the Real Estate Credit Bank of Turkey (a State Economic

Enterprise, or SOE), were Ataköy Beach on the seaward side of the coastal road. In 1959, Ataköy Beach Motels were built next to the beach facilities. Two new motel blocks were added in 1962, and between 1961 and 1963, Camping Ataköy and Camping 2 were designed and built on both sides of the beach facilities (Giray & Tayfun, 1963). Additions were made to the motel facilities in 1967. The Ataköy Beach facilities and camping facilities, which lost their function over time as a result of increasing sea pollution in the 1970s, were demolished between 1986 and 1988 for the Ataköy Tourism Complex in the area declared as the 'Ataköy Tourism Center'.

A shopping center (Galeria), an international marina, hotels and other commercial, restaurants and entertainment units and a sea bus pier were planned in 1988 within the scope of the 'Ataköy Tourism Complex' planning application on an area of approximately 50 hectares.

The motels that continued to be used until recently were demolished in 2009 by TOKİ and Istanbul Metropolitan Municipality for different housing projects planned to be built on the coast (Yöney, 2018). Today, the southern part of the coastal road, except for the area planned as the National Garden and opened for public use, has become an area where access to the sea is completely cut off from the public with luxury housing/tourism projects and can only be used by the residents of the houses.

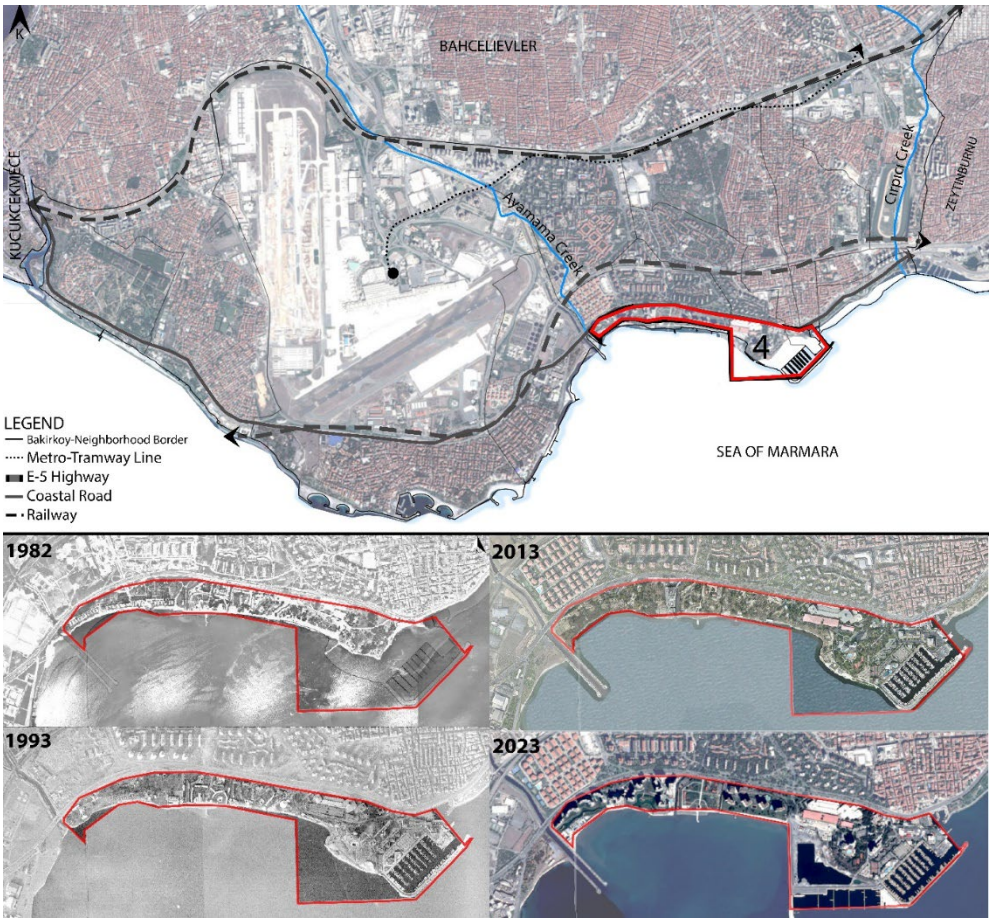

Figure 13 Case 4 spatial change during periods (Source of the map base: City Guide, different years, Istanbul Metropolitan Municipality)

4.5. Case 5: From Airport to National Garden

After the Tripoli War (1911-1912), a military aviation commission was established by the Ottoman General Staff. As a result of the commission's studies, a suitable location for flight practice was found a few kilometers north of Ayestefanos (Yeşilköy) and this area formed the basis of today's Atatürk (Yeşilköy) Airport. In 1912, the construction for Tayyare School started.

In 1936, Nuri Demirağ purchased the Elmaspaşa Farm in Yeşilköy for test flights. A large airstrip, hangars and an aircraft maintenance workshop were built on the land in Yeşilköy. The Yeşilköy facilities, now used as Atatürk Airport, were called the 'Sky School' when it was founded.

In 1944, the Sky School and its lands were expropriated on the initiative of the Turkish Aeronautical Association, and it was decided to expand the airport in Yeşilköy and establish an international airport. In 1953, Yeşilköy Airport was put into service. A new runway was added to the international airport in 1972. In 1985, it was renamed Atatürk International Airport (Kline, 2002).

Following the construction of a new airport in the north of Istanbul, Atatürk Airport was closed to flights in April 2019 on the grounds that the new airport conflicted with air traffic. Within the scope of the preparations in the area planned to be built as a 'National Garden' by the central government, runway demolition operations were initiated in October 2019. Along with these developments, a decision was taken to build a pandemic hospital to combat the coronavirus outbreak affecting the whole world, and the construction of the hospital was completed.

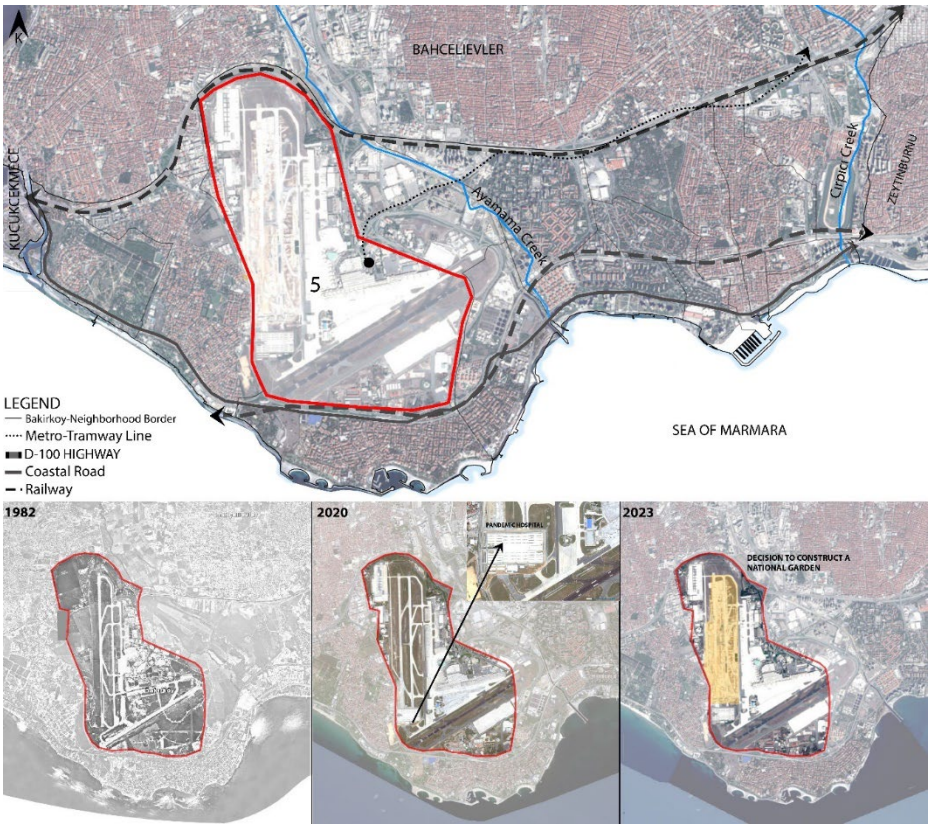

Figure 14 Case 5 spatial change during periods (Source of the map base: City Guide, different years, Istanbul Metropolitan Municipality)

In May 2022, the functions of airport / military area and military security zone were changed to national garden and urban and regional social infrastructure area with the amendment made in the 1/100.000 scale Environmental Plan applied throughout Istanbul. Construction is ongoing on the entire north-south axis in the east of the area.

The closure of Atatürk Airport, which provides services on an international scale, and the reuse of the area on an urban scale is a process that needs to be evaluated in terms of effectively directing both central and local government policies and public expenditures.This spatial change offers important opportunities for improving public health, environmental sustainability and urban quality of life. However, in terms of the effective use of resources, the area that was historically used with a focus on transportation function should have remained in the transportation function and the plan decisions should have been evaluated at a smaller scale in public spaces within Bakırköy borders.

5. Conclusion and Evaluation

This study reveals how the physical space of Istanbul has been shaped by economic changes, administrative decisions, and functional changes in land use from ancient times to the present. In this context, the spatial change and development in Istanbul have been analyzed by evaluating sample cases in Bakırköy, a district whose history shares similar characteristics with that of the city. The city's development was influenced by the administrative decisions of the Roman, Byzantine, and Ottoman empires starting from the ancient period (Figure 4).

After the 17th century, Bakırköy's popularity as a resort area along the Marmara Sea coast, outside the historical peninsula, led to the district's spatial expansion around the historical city center. The introduction of the suburban train in 1871 increased accessibility to the district. Following the proclamation of the Republic, the intensification of state investments in Bakırköy's existing industrial areas and the construction of residential areas to meet the housing needs of the industrial workforce led to further spatial expansion.

Between 1950 and 1980, the shaping of urban space through the function of industry pushed the population migrating from rural to urban areas to search for spatial locations, triggering the formation of slum areas. The location of industry was influenced by both upper-scale plan decisions and the development of transportation infrastructure, such as the First Bosphorus Bridge and the D-100 highway connection.

From 1980 to 2000, urban space demands shifted due to changes in production and consumption habits. The decentralization of industrial areas to the city periphery led to the transformation of vacant areas, which were repurposed for service sector and luxury housing projects. After 2000, the changes in land use functions that emerged in the previous period gained momentum and took on a new dimension with public-private sector collaborations. The idle industrial areas in Bakırköy were not considered for industrial heritage protection and were instead transformed into upper-income group housing areas through public-private partnerships.

Although Bakırköy has historically been spatially connected to the coast, the declaration of the coastline as a Tourism Center Area completely severed public access. The long coastline of the settlement, historically known as the 'Long Village', has been reserved for housing and tourism, opening it to private sector use.

In conclusion, the pressing issue of earthquake risk in Istanbul is particularly significant for Bakırköy, given its location along the coastline and proximity to the earthquake fault line. The increased density resulting from multi-story constructions on reclaimed coastal areas highlights the negative impact of building spaces based on consumption from the perspectives of sustainability, urban resilience, and livability. Strategies for spatial transformation and development must be redefined and implemented with these fundamental concepts in mind.

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Note

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