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New Searches in Turkish Architecture in the 1980-2000 Period: Multi-Storey Bank Buildings

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Abstract

Architecture has been affected by cultural, social, political and economic changes throughout history. The architecture of the Republican period is dominated by concepts such as traditionalism, Turkism, functionality and locality. In this process from the proclamation of the Republic to the 21st century, the search for identity in architecture can be analysed in three periods. The years between 1910-1930 are the First Nationalist Architecture in which Ottoman and Seljuk references are used under the influence of nationalist ideas. In the 1940s, the period of II. Nationalist Architecture, in which traditional elements were used, began. In the 1960s, architects interpreted local identity with modern language. In this 60-year period, architects are in search of an intersection between modern architecture and local architecture. After 1980, the changing political process and the global economic strategies adopted by Turkey changed the socio-cultural structure of the country. In this context, Turkish architects have also been affected by the global architecture that affects the whole world. The international architecture that emerged as a result of globalisation is a modern language that is far away from the place and its context, in which postmodern and minimalist movements started to dominate. In this period, the construction investments made by banks, which have a significant capital in Turkey under the influence of globalisation, were influenced by this postmodern architectural language. Important architects of the period designed the multi-storey buildings reflecting the corporate identities of financially strong banks. Therefore, the best examples of the architectural language of the period in Turkey are bank buildings. After 2000, with the changes in building supervision and the development of computer-aided design, building construction systems and high-rise building examples have developed. Within the scope of the study, multi-storey bank buildings designed by prominent architects of the period between 1980-2000 were investigated. Examples of bank buildings in Istanbul, Ankara and Izmir are compared by examining their architectural style, spatial organisation and their relationship with the city. It is revealed how these buildings were shaped as a synthesis of global architectural trends away from local architecture. In these examples, the effort of the bank buildings to be symbolic and prestigious buildings is seen in the façade structural elements, façade formations and material usage.

1. INTRODUCTION

20th century Turkish architecture is a process shaped by a combination of historical transformation and cultural richness. The collapse of the Ottoman Empire and the establishment of the Republic brought about a radical change in the architectural scene. This evolution, amidst ideological turmoil, led to the emergence of various architectural movements reflecting the search for a balance between tradition and modernism. Bank buildings and activities were also influenced by the architectural trends and changing economic conditions during this period.

During the 19th and early 20th centuries, including the National Architecture I movement, in which Galata Bankers dominated banking activities, bankers formed an important part of the Ottoman economy with their activities. Foreign banks were also active during this period. During the Ottoman period, 18 banks were established and continued their existence until the Republican period [1]. Founded in 1917,

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Itibar-ı Milli Bank replaced the Ottoman Bank and became a real state bank. When early 20th century banks are analyzed, it is seen that very few of them built a bank building for their own operations.

It is observed that most of the others continued their activities in rooms or floors they rented in inns. While most of the others continued their activities in the rooms or floors they rented in inns, a few of them used the buildings of the evacuated banks [2]. After the proclamation of the Republic, banking activities in Turkey gained momentum and new banks were established. The services of foreign banks were stopped and it is known that 18 national and 13 foreign banks in Turkey were closed in 1923 [3]. Most of the newly established banks started their operations in the early 20th century and the negative attitude towards foreign banks continued until the economic depression of 1929 [4]. In 1923, with the Izmir Economic Congress, a common ground was reached on the establishment of privately owned banks in Turkey and this event was an important factor that would move banking forward [5]. With the impact of the Great Depression, the number of banks in Turkey decreased from 60 in 1932 to 40 in 1945. From this year until today, the number of banks has always increased, although there have been some closures [1]. After that, the establishment of both national and private banks increased rapidly and banks started to form their own structures. The developments in the history of banking in Turkey took place in the 20th century. Therefore, the structuring element is very important in these processes. 20th century Turkish architecture emphasizes the effects of the ideological and economic transformations after the foundation of the Republic on architecture and the emergence of various movements reflecting the balance between tradition and modernism.

By 1980, the banking sector was also affected by the political processes in Turkey. Neoliberal thought, which was supported especially between 1980-200, a period of opening up and globalization affecting the economy, led to a period of liberalization and opening up in banking [6]. Increased competition in the banking sector thanks to political developments and increased international investments led to an increase in bank structures. With these developments in 1980-200, it is seen as a factor that banks with great economic power prefer multi-storey buildings in the buildings constructed to show the power of institutionalization.

Politics has had an impact on the growth and structuring of the banking sector as well as on the architecture of Turkey. These influences can be seen from the understanding of localism that began with the proclamation of the Republic to the modernism pioneered by international architecture.

After 1980, neoliberal policies also affected architecture. At the beginning of the 20th century, the Republic of Turkey, as a new state, began to search for local architecture. These searches first emerged as traces of Ottoman and Seljuk architecture. Although the influence of modernism began in 1930, the concept of 'nationalism' became influential again in 1940, especially in educational buildings. Sedat Hakkı Eldem is shown as the leading architect of this process, which is the Nationalist Modern Architecture II period. The years 1950-1960 were a period in which a modern style in architecture was accepted under the leadership of the USA. The liberal policies implemented under American leadership led to the influence of international forms in Turkish Architecture. In the years 1960-1980, new architectural trends as well as the international style seen in previous periods continued to be applied [7]. In this context, the political and economic developments in the Republic of Turkey between 1980-200 affected the banking sector positively and the sector, which developed with investments, made new building investments in these years. These buildings were high-rise buildings to symbolize the power of banks and money. During this period, Turkish Architecture was influenced by international expansions, followed global architectural trends and gave examples of postmodern architecture. These examples can be read through bank buildings, one of the important building types of the period.

2. METHOD

This study aims to investigate the effects of the global architectural influences that came with the adoption of the global economic strategies of the period on Turkish architecture. Thanks to the globalization and economic developments between 1980-2000, banks are in a financially strong position. Financially strong banks invest in multi-storey bank buildings that emphasize institutional strength.

Therefore, high-rise bank buildings are good examples of global architectural influences and developments. Within the scope of this study, buildings from three different metropolitan cities - Istanbul, Ankara and Izmir - were selected to better examine global influences. Four buildings designed by prominent architects and constructed between 1980 and 2000 were selected for the study. The architectural style, spatial organization and urban relationships of the selected multi-storey bank buildings were examined. The common features of these banks are grouped under main headings such as building-environment relationship, plan organization and technological developments-facade features. The evolutionary processes of bank buildings in Turkey and the architectural identity of the period are evaluated. This evaluation emphasizes that bank buildings are important not only in architectural terms but also in economic, social and cultural contexts.

3. 20TH CENTURY TURKISH ARCHITECTURE

Turkish architecture spent the 20th century influenced by political and economic developments, searching for its architectural identity and questioning concepts such as traditionalism, localism and Turkism for a long time. The First Nationalist Architectural Movement, the first movement of this process, shows its influence in official buildings between 1910-1930 and extends from the end of the Ottoman Period Architecture to the first years of the Republic.

The architects of the period tried to create a new Turkish national style that aimed to be nationalist but used both elements and design concepts of Seljuk, Ottoman and Islamic architecture. This style was recognized as the Turkish National Style in the pre-Republican period [8]. In this process until the first years of the Republic, we can say that there is an ironic attitude to the use of differences by this movement, which claims to create a new Turkish national style using elements of classical Turkish architecture.

In the architecture of this period, the concept of 'nationality' is intensely questioned for the newly established Republic of Turkey. The concept of nationalism that emerged with the Izmir Economic Congress continued until the Depression of 1929. While every type of building is affected by this process, banks, which are indicators of the economy, are undoubtedly affected by this process.

Only national banks were established and banks with foreign capital were not allowed to operate. In 1924, the Ottoman Bank was nationalized, the Central Bank of the Republic of Turkey was established in 1930, and then state banks such as Iller Bank, Emlak ve Kredi Bank, Halkbank were established [9]. All these influences led to the reflection of nationalism on bank buildings in the architectural context. Vedat Tek and Kemaleddin Bey are the most influential architects of this period who encountered nationalism.
During this period, the process in Turkey until 1927-1933 was led by western architects from abroad, but could not reflect the revolutionary and innovative structure of the Republic. With the increase in the number of national architects returning home after receiving education, reactions to the modern architectural understanding applied by western architects in Turkey began to emerge. In this context, the Second National Architecture Movement (1939-1950) was born [10]. After the Second World War, in the years 1940-1950, the understanding of "nationalism" supported by the state was influential in the architectural field of the period, especially in educational institutions. In the same years, the dominant regime of Western states and the use of monumental designs in architectural products greatly influenced the dominant view of the period [11]. This situation was effective in the development of Second National Architecture. The questioning of nationalism created a synthesis understanding of architecture based on traditional materials and examples of civil architecture built in the past. However, due to the economic and political developments after 1950, it succumbed to modernism and a period of modern architecture detached from its context began to dominate until 1960. As liberal attitudes were supported during this period, the government made agreements with international companies for large projects such as ports, factories, bridges, etc. The import of construction materials and cooperation with the US influenced the architectural attitude in these years. Thus, in the 1950s and 1960s, international design ideas dominated in Turkey under the leadership of the United States. In addition, new construction techniques were also introduced. When we look at the Hilton Hotel (1955) and Emek İş Han (1959), two of the most prominent buildings of the period, it is seen that the international style was dominant but no original elements were

used [11]. In the 1960s-1970s, the liberal policies pursued by the state with the influence of global support brought along its effects in the field of architecture. Social, economic and political crises were experienced throughout the 1970s. As a result of all these, the construction sector was negatively affected. In this period, new architectural movements as well as the international style were continued. With the 1980 coup d'état, changes were observed in economic, social and political phenomena.

4. ARCHITECTURE IN TURKEY IN THE 1980-2000 YEARS

There was a military coup in Turkey in 1980, and after Turgut Özal came to power, neoliberal policies were supported, but the desired improvements in the economy were not achieved [12].

Opening up policies have affected not only the economic sphere but also the world of architecture. These processes dominated by neoliberal economics have also affected land use, spatial organization and architecture [8].

In 1969 in the West The effects of postmodernism, which began to be seen in 1980, began to be seen in Turkish architecture. In this context, neoliberalism, as the new intellectual process that emerged in global political and economic expansions, tried to keep up with global architecture in the world of architecture. The intellectual processes and social habits of the period led to the need for new functions and building design in architecture. The ostentatious and high-rise buildings built in big cities coexisted with neighborhoods consisting of unplanned slums formed by ongoing internal migration, and social segregation emerged within the city [13]. In this period, increased financial means and technological developments supported the rising building density. In the Liberalization and Opening Up Period (1981-2001), in addition to the increasing congested construction, the effort to rise vertically is also seen in bank buildings. Significant changes and events in the 1980-2000 period have affected the banking sector.
The effects of important changes and events in the 1980-2000 period on banking had important consequences in the architectural field. With the effect of new investments in domestic and foreign markets and opening up to foreign markets, cities have become investment instruments for international banks, and banks have retained a significant investment power until the crisis in 2001. With the use of advanced technology, construction systems and materials, these investments can be seen in high-rise buildings as an indicator of financial power. Turkey's leading architects, as another result of globalization and internationalization in the domestic market, have also created landmark buildings of the period. Especially the effects of globalization on Turkish architecture can be clearly seen in the buildings designed by Turkish architects, which are influenced by the postmodern architectural language. Thus, these high-rise buildings, which financially powerful banks saw as a reflection of their corporate identity, were designed by the leading architects of the period. Post-1980 Turkish architecture has been in an ambiguous and variable approach between nationalism and universalism. There is no unity of style or architectural expression in Turkish architecture as seen in previous periods. Out-of-context buildings were designed with a postmodern architectural approach due to the current international architectural understanding's use of traditional connotations-elements with minimalist movements contrary to this tradition. The combination of both tradition and modernity gave this understanding an ironic angle. In the period between this duality, the bank buildings that held the economic power of the period were also affected. The understanding of postmodern style, which emerged with the ironic use of different or opposite elements together between tradition and modernity, and the structures of the bank buildings of the period are worthy of research and understanding. In this context, 4 sample bank buildings built between 1980-2000 and designed by leading architects of the period were selected for research. Yapı Kredi Bank Osmanbey Branch, Central Bank Izmir Branch, Şekerbank Head Office Ankara, Halk Bank Head Office buildings were analyzed as they reflect the architectural characteristics of the period.

5- BANK BUILDINGS

Bank buildings are generally similar to office buildings with their offices and working environments. In bank buildings, there is service rather than production [14]. Due to this service providing structure, there are different areas between the customer and the employee in bank buildings, which vary according to the nature of the transaction. As a result of the service performed in this space, documents, valuables, etc.

need to be stored in an area such as a safe [15]. These function-specific units seen in banks have become the preferred uses in building typology over time. Entrance hall, waiting room and manager rooms are mostly located on the front façade. Offices, generally front office and back office, can be located on the façade only in cases where there is no corner blind façade. Apart from this, it usually faces the waiting room and artificial lighting is used [16]. Since the waiting hall is the area where the customer makes transactions quickly, it is important to position this area close to the front office and vertical circulation [15]. This area, where employee-customer relations are provided in bank buildings, is very important in bank space organisation. Bank Transaction Hall generally covers the areas where people make transactions in front of the counter and the area where the counter and bank customer employees are located is defined as the front office. The back office area is located just behind the front office and is not in direct contact with the customer. Manager and executive rooms are usually located on the upper and mezzanine floors. The safe room is usually protected in the basement floors [2].

5.1. Yapı Kredi Bank (YKB) Osmanbey Branch

The building was constructed on a plot of land in Şişli/Istanbul, on which there used to be a petrol station. The land was purchased by Yapı ve Kredi Bankası Mensupları Emekli Sandığı Vakfı in 1978 at a high price and a limited architectural project competition was organised between five architectural offices for the architectural competition for the YKB Osmanbey branch [8]. In 1981, the Yapı Kredi Bank building, designed by the distinguished architects of the period, Şanziment Arolat and Neşet Arolat, who won the first prize in the architectural competition held in 1979, was completed [17]. The building is still in use today as a branch of Yapı Kredi Bank.

Figure 1. *YKB google maps layout image, 2023*

Figure 2. *YKB google maps image, 2023* [25]

The YKB Osmanbey branch is located on a corner parcel at the intersection of Rumeli and Halaskargazi streets, and its plan layout fits the parcel boundaries. The fluted colonnaded facade applied on the facades facing Rumeli and Halaskargazi streets provides a perspective that emphasizes and highlights the corner. The curtain wall system and mirrored glass used on the exterior add depth to the street and increase the corner emphasis. According to this context, it is seen that a multi-storey building-city relationship is established. Only the ground floor plan of the building was found. Looking at this plan scheme, stairs are seen from several different points rather than a single central core circulation. At the entrance, at first glance, unlike today's banks, the user is greeted by a staircase instead of tellers. A gallery space is used in this area where the tellers are located. Since the building is a competition project, the plan scheme was prepared according to the requirements of a ready-made needs program given by the competition. The planning is as follows: the bank branch on the mezzanine and ground floor, offices belonging to the YKB foundation as you go up to the upper floors, and the basement is for installations and storage. It is a mixed type building with offices and programs belonging to the bank. Therefore, it is seen that there are vertical partitions between the floors considering the programs [8]. While the ground floor is an open hall where communication between the public and the customer is intense, specialization in function is seen as you go up to the upper floors. When we look at the facade design of the building, the facade was designed using fluted columns and recessed facade system along the two facades facing Rumeli and Halaskargazi streets. The use of very thin horizontal elements on the facade of the building emphasized the holistic vertical slices. Although the ground floor is emphasized through signboards, it is understood that the lack

of continuity along all facades does not disrupt the vertical integrity. The reflective glass used on the facades also supports this vertical emphasized design by ensuring that the interior mobility is not seen. The most striking element of the facade is the use of fluted columns that form vertical slices with the curtain wall. There are different explanations about the knowledge of this fluted column design.

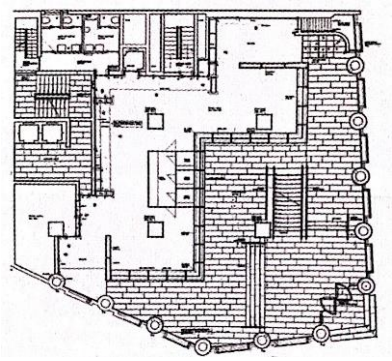


Figure 3. *YKB Plan, 1979*

Figure 4. *YKB, 1979* [19]

The architects of the building stated that the circular columns were designed with grooves in order to prevent defects on the surface considering the bare concrete production conditions at that time, and that the grooves were intended to create a measure to prevent intense graffiti caused by the tense political conditions of the period [8]. Although it is a justifiable inference considering the construction practices of the period and the political environment, the use of molds left by the contractor may also be one of the reasons for these columns [19]. The meaning of the fluted columns, which are claimed to be non-bearing and used only on two facades, seems to be related to the information contained in the period. Although it is debated how they were originally used, the result obtained shows that the recessed façade, which is a technological expression according to the period, and columns with ancient connotations were used together. Fluted columns carry different meanings for both the facade and the city. While these meanings increase the monumentality of the building with its connection to the past, they also symbolize the politics and situations of the period.

The architecture of the YKB Osmanbey Branch stands out as an important example reflecting the technological and social conditions of the period. The use of fluted columns in the design was conceived as a practical solution between the production difficulties of exposed concrete and the political tensions of the period, thus playing both an aesthetic and functional role. Furthermore, the building's location on a corner plot and the details in the façade design provide valuable clues about the relationship of tall buildings with the urban context. These features transform the YKB Osmanbey Branch into not only a financial institution but also a monument bearing the architectural and social traces of its period.

5.2. Central Bank Izmir Branch

The 1970s-1980s in İzmir was a period in which zoning regulations in the urban area continued, fire areas were rehabilitated, important buildings, inns and bazaars around Fevzi Paşa and Gazi Bulvarı / İzmir were improved. This period was an unproductive period due to the scarcity of architectural competitions, and only eight competitions were organised in Izmir during this twenty-year period [17]. One of the eight competitions held in İzmir, the Central Bank competition, is considered a historically significant event that sheds light on the socio-cultural and economic transformations of the city, providing insight into the urban development of this 20-year period. The Izmir Branch of the Central Bank of the Republic of Turkey was determined and implemented as a result of a limited architectural project competition opened by the Central Bank in 1974. The building is located in Konak Square, north of the Municipality Palace [8]. Ertur Yener and Erdoğan Elmas won the first prize among 11. The total construction area is 14.700m². The building was opened on 22 August 1983 [20]. The building is still in use today as the Central Bank.

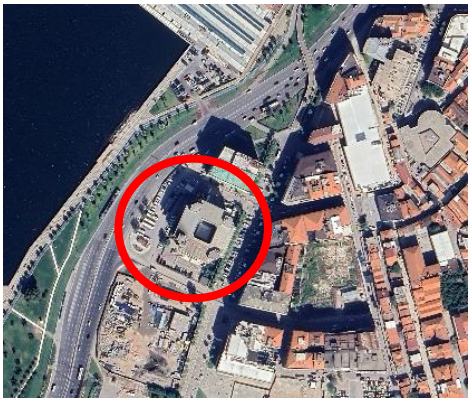


Figure 5. *Central Bank google maps image, 2023* [26]

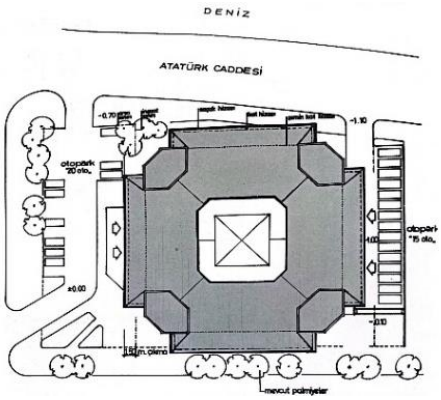


Figure 6. *Central Bank Layout, 1979* [20]

The entrance to the building is from the west façade. Today, Cumhuriyet Boulevard, which is located on the north façade and passes right in front of the building, and the green areas in front of the building are the infill areas added later. Especially in the period from 1983 until the addition of these infill areas, the building is surrounded by an open parking lot and the plot of land abuts Atatürk Street on the shoreline. In this context, it can be said that the building's relationship with the city was quite weak when it was realized in 1983. Today, although Cumhuriyet Boulevard, which passes in front of the building, is used as a parking lot in 2018, the relationship of the city with the coastline has been tried to be established with the filling areas added later. The Central Bank of Izmir, on the other hand, has increased its accessibility through the actively used Cumhuriyet Boulevard, but its connection with the coast has been severed. The building, through updates over time, has integrated with the city; however, it has also attempted to resolve the disconnection issues present during its initial construction with the addition of infill areas in the present day.

As a state bank, the building must comply with the criteria in the competition specification and the Izmir Municipality Zoning Regulations. We can say that these elements play an influential role in many aspects of the building such as its design and plan scheme. Some of the elements required in the competition specifications are as follows;

'12% sloping roof cover, no hidden-horizontal creek, air conditioning of the entire building, natural light and air in all spaces, basement floor, h:30.80 max. height, etc.' [20].

The bank's customer hall and related units, which were specified in the competition to be on the ground floor, and the units required for the restaurant-kitchen, which were proposed to be on the top floor, together with the factors mentioned above, were the main factors in shaping the stair-elevator-facility cores of the floor areas of the building. With an atrium design, which was also applied in the Central Bank of Turkey building (1931-1934), it was aimed to maintain the historical elements and references to the past, especially since it was a state building [21]. The height of the building was determined according to the zoning status [22].

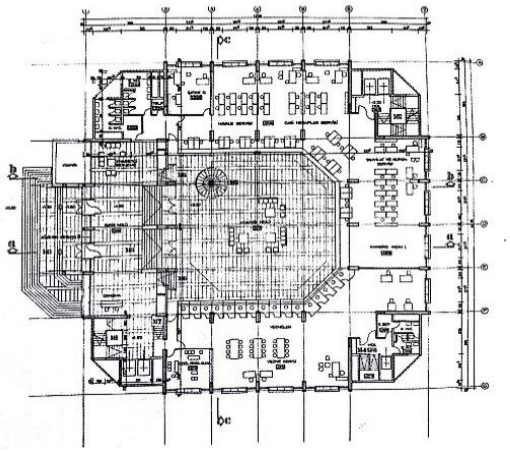


Figure 7. *Izmir Central Bank Ground Floor Plan* [20]

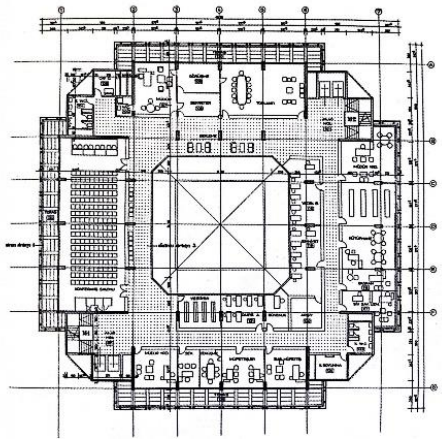


Figure 8. *Izmir Central Bank Floor Plan* [20]

The stair-elevator-facility cores are designed in blocks that are seen at 4 corners on the façade and continue vertically continuously. Thanks to the vertical circulations drawn to the edges, it allowed the plan to be analyzed more freely in the interior spaces and allowed the design of an atrium in the center. In the context of how the areas around the atrium in the center are used between floors, it provides the opportunity to accommodate different sizes of offices etc. in appropriate sizes, and is designed with a flexible planning approach that is suitable for developments over time [8]. The ground floor is raised and the main vault unit is organized under this raised floor. The ground floor is a double height floor with a gallery [22]. On the lower ground floor of the building; technical services and vault, on the mezzanine; archives and resting terrace, on the 1st floor; directorate, meeting room, library, on the 2nd-3rd-4th floors; passive services and on the 5th floor; restaurant, kitchen [20]. When we enter the ground floor, the atrium with the customer hall and tellers welcomes people first. Along the perimeter of this hall and along the mezzanine floor, a square plan scheme was applied with technical services (current accounts service, remittance service, bond and coupon service) and a vault. The blocks located at the 4 corners of the façade and extending continuously from the ground to the terrace contain stair-elevator-facility cores. These core blocks are used on the facade by using the curtain wall system and separating themselves in the facade design. Thanks to this design, the building contains technological elements according to its period with the use of curtain wall system. Both the use of historical elements and the use of technological elements according to the period are seen on the facade.

Figure 9. *Izmir Central Bank, 2018* [27]

Figure 10. *Central Bank, Ulus- Ankara* [28]

When we look at the façade design of the building, we can see some traces of the Central Bank of the Republic of Turkey Administration Center, for which a design competition was held in 1973. The continuous vertical lines from the ground up to a certain level and the addition of horizontal lines as you go up, creating equal-sized windows that create a uniform effect, is a design approach that is also seen in the Central Bank of the Republic of Turkey Administration Center. White artificial marble is used for the facade surfaces and precast elements, and walnut-colored wood is used for the blinds. The sun shades on the ground floor, mezzanine and corners, which also serve as security, are designed in brown elexolated

aluminum [20]. In the Headquarters building designed by Holzmeister, the facade is made of cut stone material. The use of artificial marble adds symbolism with the use of the historical element.

The Central Bank building, as a significant architectural example in İzmir's modernization process, has gradually enhanced its interaction with the city. The design of the structure has integrated both the preservation of historical elements and the technological innovations of its time, thereby playing a crucial role in blending with the urban fabric and contributing to the city's cultural integration.

5.3. Şekerbank General Management Ankara Branch

The building, which is currently used by the Union of Municipalities of Turkey, was started to be used in 1982. The land where the building is located is important as it is at the junction of two different districts of Ankara. The land is formed by the merger of two separate city parcels that front two streets, Atatürk Boulevard and Tunus Street, and are located between Kızılay and Kavaklıdere neighborhoods. The plot is also located on an axis where the Grand National Assembly has an entrance [20]. The main entrance to the building is via Atatürk Boulevard, and this façade is designed with retractions to emphasize the entrance.

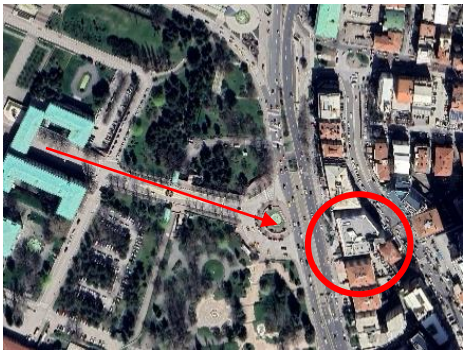


Figure 11. *Şekerbank google maps image, 2023* [29]

Figure 12. *Şekerbank, 1997* [20]

Şekerbank Headquarters is a successful example of creating a feature among the monotony of rows of buildings [18]. This successful example preserves the originality of an intersection created with setbacks at the entrance and establishing a relationship with the street among the buildings designed based on the parcel boundaries along the street where the building is located. Opposite the facade of the building facing Atatürk Boulevard are the Grand National Assembly of Turkey and the National Sovereignty Park. Especially the entrance door of the building, when approaching the building from a distance, an architectural interpretation that tells where the entrance is and is made with care is a design decision used in the Seljuk-Ottoman period. This design fiction is seen in the entrance façade of Şekerbank Headquarters as an element influenced by Oral Vural, the architect of the building. In this context, the Şekerbank Headquarters building can be given as an example of this fiction with its interior and exterior relations and the legibility of the entrance and the interior [20]. The entrance of the building becomes more meaningful when oriented towards this axis.

The fact that there is no elevation opposite the emphasized entrance facade makes it possible to look at the entrance of the building from further away. In this way, the facade emphasized on the facade facing Atatürk Boulevard becomes even more effective. Unlike a bank building, the building has also brought some differences as it is a headquarters building. Especially the elements of Şekerbank's corporate identity have been very effective in the plan scheme of the building. Initially, all the relations of the bank and the necessary units depending on the functions were considered. But unlike other banks, the shareholders of the bank were both partners and customers of the bank. These partners were the beet producers and their affiliated beet cooperatives. These shareholders had a close relationship with the bank management and the central branch. Therefore, in the relationships listed as 'Top Management-Central Branch-Partners + Customers', 'Partners + Customers' had to be quite close to each other, even in the same place.

This spatial relationship should have provided a unity in the organization of the interior space and the exterior space (which should have been created on Atatürk Boulevard). The spatial organization ties between the units outside of this relationship were to be resolved within themselves [20]. Thus, the 'Partners + Customers' section of the building, which was desired to provide integrity both in the interior space and vertically, was designed on the facade facing Atatürk Boulevard, which is the entrance facade of the building.

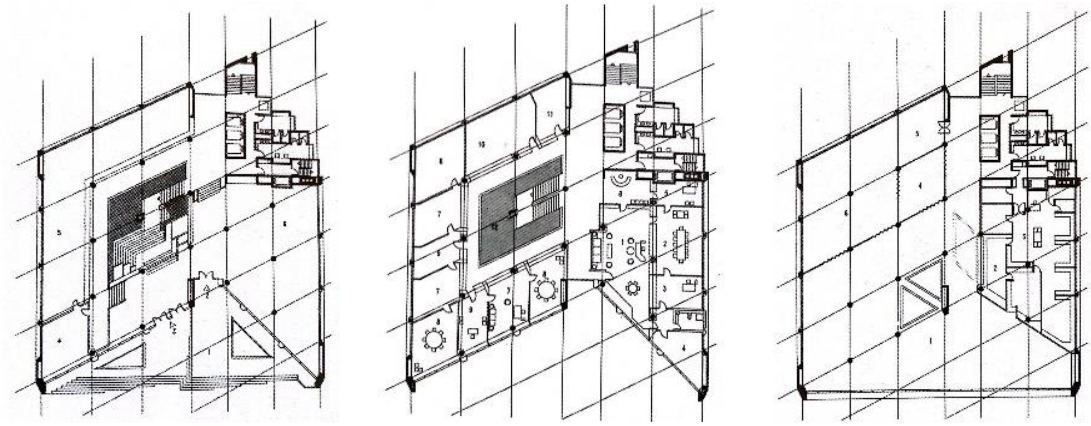


Figure 13. *Şekerbank Ground Floor Plan - Executive Office Floor Plan - 6th Floor Plan* [20].

The building has a unique plan scheme with the setbacks made on both the parcel boundaries and the entrance façade. When we enter the ground floor of the building, the staircase, which is the main circulation, welcomes the users. Other units are placed around the staircase, which is designed like a core. This staircase, which is designed as a single-armed staircase on the ground floor, continues with two-armed staircases as L and U on the upper floors. Toilets and plumbing as wet areas are designed as a separate core on the rear façade of the building. There are design differences on the facades of the building facing these two streets.

In particular, the façade facing Atatürk Boulevard is dominated entirely by vertical lines, while the façade facing Tunus Street is a façade with a high density of horizontal moldings. In this context, it can be said that the differences seen in the façade designs are a reference to the meeting of two different city parcels. The building, which has an entrance from the facade facing Atatürk Boulevard, has high visibility only on the facades facing Atatürk Boulevard and Tunus Street. The integrity fiction considered for 'Partners + Customers' in the plan scheme is also seen on the exterior façade. Since the service areas of 'Partners + Customers', which are designed on this façade in the plan scheme, are approached with the aim of completeness, no horizontal trace is used along this façade, thus the desired completeness is achieved. The pediment and steel cross systems on this façade are formed by crossing. The carrier system is not hidden or covered. The curtain wall, which is applied continuously vertically, is completed with a steel structure that can be considered technological. It is seen that the façade design is an interpretation of the Ottoman-Seljuk architectural design perspective with the technological and innovative production systems of the period. Different and even opposite elements are used together in the building.

Figure 14. *Şekerbank,1990* [30

Figure 15. *Şekerbank,1990* [20]

On the entrance facade, aluminum panels with the dark green color of the Şekerbank emblem and bronze colored heat insulated reflective glass were used throughout the facade. Thus, it is possible to see the effects of corporate identity in the design stages of Şekerbank Headquarters, which is a bank structure.
In addition, the building, whose architect is Oral Vural, won the Chamber of Architects National Architecture Award in 1992 [8].

Şekerbank Headquarters building is a significant example in modern Turkish architecture that reflects Seljuk-Ottoman influences while integrating contemporary technological innovations. This structure demonstrates the impact of corporate identity on architectural design and how spatial organization is shaped according to user needs.

5.4. Halk Bank General Management Ankara Branch

The building, now used as the Undersecretariat of Treasury, is the project of Doğan Tekeli and Sami Sisa, who won the first prize in the competition. Located in Ankara, the building is situated on one of the corner plots where İnönü Boulevard (Eskişehir Road) and Konya Road intersect. In 1983, the project of the building was obtained as a result of a limited competition and it was opened for use in 1991. The design of the building, which was requested to include multifunctional and wide programs in the competition, was expected to be a symbolic building design for Ankara and the bank due to the location of the land. Although the main building in the project, located on the intercity road, is the Halk Bank Headquarters building, there are also other units of the bank on the land. While the other units of the bank are located on this land, there are gardens and semi-open spaces in the landscape of the land [23]. Topography is used in the design of the building's outdoor environment and the pedestrian path is designed to be embedded in relation to the outside of the plot. The tall building is connected to the square element with this path full of trees and the canopy in the square defines the entrance of the building [8]. While the water element, trees and canopies are used throughout the landscape, other units are placed here as low-rise masses (auditorium, clubhouse, guest unit). Especially in the entrance axis of the Halk Bank General Directorate, which is designed high as the main building, pool and canopied spaces are designed. Thus, a gradual transition was intended to be applied when entering the building and the building-environment relationship was established by considering the human scale. Some spatial organization elements of the high-rise building, which covers the administrative and units of the Head Office, have been developed, some of which are as follows; to construct the majority of the offices on the north-south axis, to reach a maximum walking distance of 25m from the core of the building, to construct the offices in a way to receive natural light [23]. It is seen that the desired elements want the high-rise building to receive natural light and to positively affect people's ergonomic working conditions and social life. Thanks to these elements, the building offers more ergonomic and healthy office environments despite being a high building.

Figure 16. *Halk Bank google maps image,2023* [31]

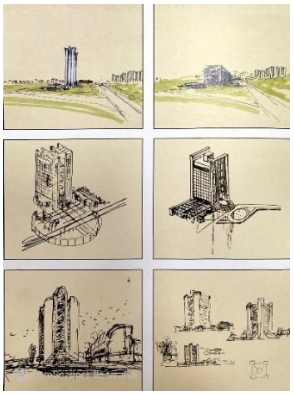


Figure 17. *Halk Bank Design Sketch 1990* [24]

The plan scheme was obtained by connecting different functions on different floors to the vertical circulation core of the building. The floor and function distributions of the building are planned in such a way that the main entrance floor, the resting hall for the staff, the main cafeteria and the units required for

vehicle transportation on the lower floor, the installation, archive, safe rooms on the lower floor and the administrative offices and bank units on the upper levels of the building are connected to the core. While designing the building, it was desired that it should have a symbolic quality and that this building, which will be left to the 21st century, should be open to technological developments. The towers on the four corners of the high building contain the installation chimneys of the building that will live in the 21st century and at the same time, it will provide protection against horizontal wind and earthquake effects with its vertical curtain walls [23]. Thus, thanks to the towers, it is ensured to keep pace with the age expected from the building.

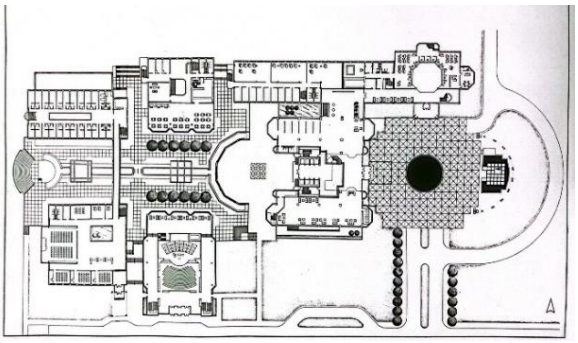


Figure 18. *Halk Bank Ground floor plan* [24]

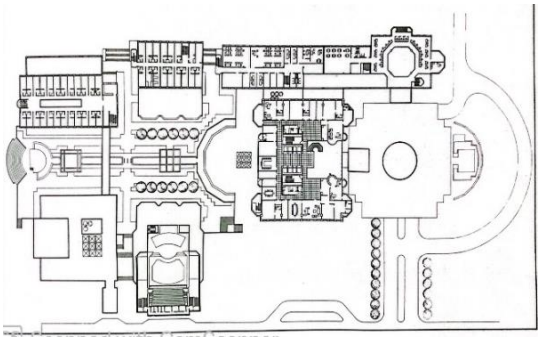


Figure 19. *Halk Bank Floor type plan* [24]

The towers, which occupy an important place in the facade design of the building, have an important place in the effort to become a symbolic building for Ankara. Both the exterior surfaces of the building, which is a carved rectangular box, and the towers surrounding these surfaces are conceived as a whole. This unity is intended to create the image of a gate. Due to its location, the building emphasizes a city gate in the direction of Ankara. The columns, which are considered as the frame of the door, are decorated with molds embedded in concrete. The motif applied in its decoration was adapted from the jambs of the windows of Bursa Green Mosque. Likewise, references taken from the ornaments used in the Young Ottoman period were adapted and used in the building and eaves [24]. Modern adaptations of historical elements and technological adaptations designed by thinking beyond the era are seen together. It is seen that the U-type towers rising in the building are used as a monumental element in addition to the static and installation strength of the building.

Figure 21. *Halk Bank View, 1994* [24]

Figure 22. *Halk Bank View, 1994* [24]

The carved rectangular boxes used on the façade form a grid. This grid was also carefully used in the flooring and other elements of the building. These facades have been effective in adding identity and difference to the building [18].

The General Directorate building of Halk Bankası represents the characteristic features of Turkish architecture from the 1980s and 1990s, skillfully combining modernist and postmodernist elements. The building's human-centered design principles, such as ergonomic and naturally lit office spaces, blend traditional architectural motifs, making a notable contribution to Ankara's urban landscape. Beyond its functional purpose, this structure has become a symbolic landmark in Ankara due to its openness to

technological innovations and monumental qualities. It is a significant example reflecting the architectural ethos and societal expectations of its time, from its layout to its facade design.

5. CONCLUSION

This study analyzes the architecture of multi-storey bank buildings constructed in Turkey between 1980 and 2000 and reveals how these buildings were affected by the economic, political and social dynamics of the country. This period constitutes an important cross-section of Turkey's search for an architectural identity, and the banking sector reflects this transformation in a prominent way. The research shows that the architectural design of bank buildings was shaped by global trends and that modernist approaches and international style became dominant, especially in large-scale projects. The adoption of Western architectural norms contributed to Turkey's economic and cultural integration and supported modernization efforts. The integration of elements reflecting local and national identity with modern interpretations stands out as part of Turkish architecture's effort to establish its own unique identity. The synthesis of traditional Turkish architectural elements with modern structures in the design of bank buildings has created a new and unique architectural language. This reflects Turkey's effort to adapt to the modernization process while preserving its cultural and historical heritage. The impact of economic and political fluctuations on architecture was clearly observed during this period. The liberal economic policies of the early 1980s facilitated the inflow of foreign capital into the country, creating a boom in the construction sector, and the growth in the banking sector encouraged the construction of new and modern bank buildings. However, economic crises and political uncertainties caused projects to be suspended or canceled, revealing the negative effects of such fluctuations. The decisive role of economic stability on architectural projects is clearly visible in this process. Technological developments also played an important role in architectural designs. The 1980s and 1990s were periods of rapid development in construction technologies and increased use of new materials. The use of modern materials such as steel and glass led to significant changes in the aesthetics and functionality of bank buildings. In conclusion, the study of high-rise bank buildings between 1980 and 2000 provides valuable insights into the evolution of Turkish architecture and the challenges it faced during this period. The reflections of Turkey's modernization and globalization processes on architecture can be clearly observed through the bank buildings of this period. Such studies provide an important reference point for future architectural projects and contribute to the understanding of Turkey's architectural heritage. In addition, bank buildings constructed between 1980 and 2000 have some common characteristics and design elements. These elements, categorized under the headings of building-environment relationship, plan organization and technological developments-facade features, reflect the general characteristics of bank buildings. It was revealed that bank buildings in Turkey had similar design principles and architectural solutions in a certain period, and it was understood that a common design language developed under the influence of various factors

Tablo 1. *Building and Environment Relationship Comparison Table*

Building and Environmental Features	**Buildings**			
	Yapı Kredi B.	**Central Bank I. Ş.**	**Şekerbank G. D.**	**Halk Bank G. D.**
Central Location	+	+	+	+
Proximity to Transportation Vehicles	+	+	+	+
Regulation	Discrete	Adjacent	Discrete	Discrete
Garden	None	Front	Front	Front+Back
Close Environment Interaction	+	-	+	-

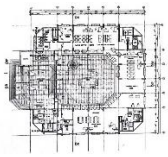
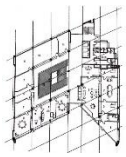
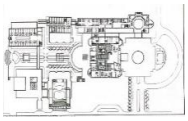
Tablo 2. *Plan Structure Comparison Table*

Plan Features	Buildings			
	Yapı Kredi B.	**Central Bank I. Ş.**	**Şekerbank G. D.**	**Halk Bank G. D.**
Production System	Reinforced	Reinforced	Reinforced + + Steel	Reinforced
Number of Floors	9	+9	+9	+9
Vertical Circulation	Double Arm + Elevator	Rotary+4 Arm + Elevator	Double Arm + Elevator	Double Arm + Elevator
Foyer - Counter	+	+	+	+
Mass Movement	+	+	+	+
Balcony	-	+	-	+
Gallery Space	+	+	+	+
Central Core	-	+	+	+
Social Space	-	+	-	+
Institutional Quality Function	-	+	+	+

Tablo 3. *Comparison Table of Technological Developments and Facade Relationship*

Facade Features	Buildings			
	Yapı Kredi B.	**Central Bank I. Ş.**	**Şekerbank G. D.**	**Halk Bank G. D.**
Symmetrical Layout	+	+	-	+
Monumental Elements	+	+	+	+
Facade Material	Joinery Systems	Cut Stone + brown elexole aluminum	Glass+ Steel	Plaster + Decoration
Traditional Elements	+	+	+	+
Socio Cultural Influence	+	+	+	+
Corporate Identity	Rotational-2 pieces	Rotational-1 piece	Rotational-1 piece	-
Innovative Approach	Facade joinery	Facade materials	Use of steel system + bronze colored heat insulated reflective glass	Advanced reinforced concrete system

Tablo 3. *Structure Comparison Table*

Structure Features	Buildings			
	Yapı Kredi B.	**Central Bank I. Ş.**	**Şekerbank G. D.**	**Halk Bank G. D.**
Architect	Şanziment Arolat ve Neşet Arolat	Ertur Yener ve Erdoğan Elmas	Oral Vural	Doğan Tekeli ve Sami Sisa
Year of Production	1981	1983	1982	1991
Original Function	Bank	Bank	Bank	Bank
Current Function	Bank	Bank	Union of Municipalities of Turkey	Undersecretariat of Treasury
Accessed Plan Image				
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Ergonomic Risk Assessment and Investigation of Outdoor Sports Equipment Designs by User Research

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Abstract

It is aimed to instill movement habits in society and provide healthy exercise to individuals with outdoor sports equipment, which is intended to be accessible to users of all ages of the society. However, when individuals use the products in these areas, incorrect usage and exercise positions performed at the wrong angles may be encountered. The aim of this study is to examine how the designs of exercise equipment in public parking areas guide the user and how they affect the user in terms of ergonomics of use and motivation to exercise. The study showed that using outdoor sports equipment did not cause any significant change in the body by creating a body pain map. The study aimed to contribute to the design of outdoor sports equipment through analysis and observations.

1. INTRODUCTION

One of the most basic human needs is movement. A person's movement occurs next to the most basic needs, such as nutrition, sleep and shelter. Movement keeps people healthy and vigorous, and benefits human physiology. The importance of moving, especially at the point of health, has been proven in many studies done so far. Along with the physical health effects of moving, its positive effects on neural health have been proven by many scientists [1].

The awareness of the importance of movement has created areas where people will move and do sports, and gradually lead people to move and exercise with different types of exercise. In this way, it is aimed at people who can go to these common areas near their homes and can easily use these outdoor walking paths and exercise areas without any membership or fee. For this, walking trails and exercise equipment have been added to the parks, which are built-in places accessible to users of all ages [1].

Since the exercise equipment in the parks is open to everyone's use, it is aimed that users of different ages and dimensional sizes will use these tools. As seen in the observations and literature review, it is known that the users misunderstand some movements and that the exerciser is not suitable for the person, that the person forces his body in positions that may cause disability [2, 9, 10].

This study aims to design sports equipment in public open spaces to guide the user, how it affects the user in terms of ergonomics, how the motivation points for exercise are reflected on the user, and to provide an opportunity to improve the designs of outdoor sports equipment in the future.

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2. DESIGN DETAILS OF OUTDOOR SPORTS EQUIPMENT

First, some findings regarding designs were obtained when the exercise equipment in open areas was examined. For example, user directions could be more comprehensive and more easily understandable. Although the visuals on the signs placed in some parks show how to do the movement, users may need to see these signs and may start using the exercise device directly. In such a case, the product is expected to guide the user with its design [11]. This is because 71% of the users who participated in this research declared that they did not know how to exercise. Likewise, 53% of users stated they needed help understanding the instructions on the outdoor sports equipment.

In addition, tools tend to move and rotate uncontrollably. While there is a possibility of misuse by the user who cannot get enough guidance about usage, it is possible to make uncontrolled and sudden movements in this case. The reason for this inference is that approximately 80% of the participants stated that they were afraid of falling while using outdoor sports equipment and therefore felt insecure. For this reason, there is an unconscious use of tools, which poses a danger.

Another subject examined is the materials used in exercise equipment. Materials that can be used in summer and winter, suitable for open space and provide ease of use should be considered for these products. Factors such as rainwater or snow accumulation should be considered because these deposits can make it challenging to use exercise equipment and create safety problems. Accumulations may form in closed footsteps and are designed hollows, or when the snow accumulated on the footsteps comes together with the plastic material, it can turn into a slippery and dangerous stepping area. This is because 78% of the participants said they do not use outdoor sports equipment in adverse weather conditions. 52% of the participants who expressed negative opinions stated that this was the effect of iron and similar metal materials on body contact areas in extreme cold and heat. Especially in movements with a moving platform, such risks should not be taken for the user’s health.

3. THE RELATIONSHIP OF OUTDOOR EXERCISE TOOLS DESIGN-ERGONOMICS

Anyone who wants can use the exercise equipment in the parks. Looking at the world in general, the number of these areas, which are places where users can quickly come and do their daily sports activities, is increasing.

For this reason, it has become clear that the tools used in today's conditions must be designed according to ergonomic rules, not negatively affecting users. Otherwise, the product designed against ergonomic rules needs to provide ease of use for the user.

In terms of the relationship between exercise habits and ergonomics, the ergonomics of outdoor sports equipment directly affects the exercise performed. Ergonomically well-designed equipment helps users maintain correct form while exercising, which reduces the risk of injury. At the same time, it increases the likelihood that users will use this equipment regularly. Non-ergonomic equipment can increase the risk of injury to users, reducing their desire to exercise. Exercise habits and ergonomics in outdoor sports equipment are complementary elements that play an essential role in increasing individual’s general health and fitness levels. Existing literature shows that well-designed outdoor sports equipment improves users' regular exercise habits and general health. At the same time, it is emphasized that ergonomic design increases the user experience by reducing the risk of injury. Therefore, giving importance to ergonomics in the design of outdoor sports equipment is critical to ensuring that users exercise safely and effectively.

When the sports equipment designs are examined, as a requirement of ergonomics, the user is expected to increase their mobility without physiological strain [3].

For this reason, exercise equipment designs should be designed in a way that is easy to understand and does not cause injury. For this, it is of great importance that it is ergonomic. The exercise equipment designed without considering the different limb sizes of the people will cause the body to be forced

incorrectly and cause injury. As a design improvement, 59% of users stated that the handle and grip points were unsuitable. In this case, the holding and grasping points must be shaped to prevent slipping.

64% of the participants stated that outdoor sports equipment's resistance levels were unsuitable for them. This is because the impact areas of these tools were made for standard users, and it was observed that the impact areas of small and large age groups were ignored. This situation causes a decrease in the sustainability of product use [4].

The first boundary condition in the design of sports equipment is to know the anthropometric data of the users. The anthropometric data of the target user group should be taken as a reference for ergonomic design in the design of the products with a user-oriented approach [5, 6].

Figure 1. *Use images of various outdoor sports equipment*

According to the answers from users, ergonomic and climatic conditions are not considered in the design of outdoor sports equipment; it seems that general measurements are taken as reference. This situation harms usage [12]. However, it has been observed that users with different body sizes use these tools during use. The reason for manufacturing with standard size may be ignoring the necessary scientific ergonomic rules starting from the design or the cost factor coming to the fore during manufacturing. Problems arising from this situation cause injuries, which will be discussed in the next section. In addition, it has been observed that the region's climatic conditions are also necessary. Because sports equipment is constantly exposed to natural events such as sun or rain, snow adversely affects its use.

In terms of ergonomics, the aim was to evaluate the products as suitable for the user and to design them according to the user’s anthropometric data [7].

The expression of ergonomics has positive effects on the performance and productivity of the users, and it is aimed to reduce the unnecessary strain on the user during sports. To create the most efficient environment for the user, handling the sport by the physical, physiological, and anatomical dimensions of the user; the fact that the designed product is related to the user's physical capabilities is among the functions of the ergonomic concept because it is only in this way that the person can get efficiency from the exercise they do [8].

When the products used by the users for sports purposes are made suitable for ergonomics, the physical deformations of the users due to sports activities are reduced. However, otherwise, users may experience physical discomfort. In addition, if the products that are not designed according to ergonomic rules are not suitable for use, the product will not be demanded by the user. This situation could be economical as it will be an unused product and inactive raw material for the future [3].

4. INVESTIGATION OF THE USER RELATIONSHIP WITH THE DESIGNS OF OUTDOOR SPORTS EQUIPMENT

Considering that many open spaces are parks and exercise areas, the design of these exercise areas is very importance. With the changes to be made to the design, essential touches that will increase the users' life quality will be possible [13]. For this reason, this research aims to determine the problematic points by learning the users' habits and thoughts on these areas.

The research method chosen for this data, which is planned to be found, is a survey. By contacting the users one-on-one, information was collected about their exercise routines in these exercise areas and their perception of these devices. The sample of this research aimed to reach a group that actively uses these areas. For this reason, the park areas were visited, the individuals already exercising there were selected, and a survey was conducted.

Since the design in question has an impact on exercise areas and health, interviews were held with health and sports scientists about whether these designs in exercise areas are suitable for their purpose and whether they will provide healthy exercise. Here, too, data were obtained from experts on the efficiency and effects of these tools. The aim here is to obtain data on injuries that have occurred or may occur up to now with the use of these instruments.

5. INVESTIGATION OF EXERCISE CONSCIOUSNESS AND HABITS OF INDIVIDUALS USING OUTDOOR SPORTS EQUIPMENT

It was collected by survey and face-to-face interview method with 50 users.

Table 1. *Age distribution of participants*

Age	Participant
20-30	16
31-40	13
41-50	6
51-60	5
61-above	10

In the survey, the users' habits of using the parking areas, their discomfort, the pain they experience while using the exercise equipment, their perception of the exercise equipment, and their comments on the efficiency of the equipment, and the frequency of use were examined. This section it is aimed to collect data about the problems experienced by the user while doing sports in the exercise areas and their exercise routines.

In this study, individuals who use outdoor sports equipment, the frequency of use of these equipment, whether they have enough knowledge about exercise and sports, and injuries and injuries related to exercise were examined.

In order to measure the efficiency and usability of outdoor sports equipment and to see how it is evaluated by users, a questionnaire was prepared for a group of 50 people from different age groups on how they use and position the exercise equipment.

Within the scope of the research, the answers received when the participants were asked about their knowledge of exercise and sports are as follows.

Table 2. *Level of knowledge about exercise and sports*

Level	**Ratio**
Very Well	1%
Good Well	9%
Intermediate	40%
Low	28%
Nothing	22%

When we look at the answers given above, it is seen that more than the users' interest in sports is needed. Since the participants need to learn how to use their bodies correctly, they do not exercise at the required intensity. They cannot do sports fully and correctly because they need to know the working logic of the exercise equipment and how the effects should be on the body.

When the answers to some critical determining questions in the survey are examined,While 97% of the group expressed positive mental feedback about exercising, 59% stated that the tools were insufficient, and 69% needed to know which muscles the tools worked on and which areas they addressed.

We see that 49% of the participants need to learn which areas the tools operate and what they do.

We see that 58.4% of the participants need to learn how to use these exercise tools for their goals. For this reason, a conscious guiding person or directive should guide users in this regard.

We see that 47% of users wonder whether these tools work correctly..

Most users feel pain in the knee, hip, shoulder, neck and waist joints. These pains pose a threat to the physical health of the individual, as incorrect and intense loads on the joint areas can lead to consequences such as disability.

Users need to learn how to exercise in these areas, and they find the information given by the directions insufficient when making applications. Even if users exercise, some pain occurs in the joint areas, and occasionally, they doubt whether they are working correctly. In addition, even if they complete the sport, they may not get productive results because they need to know whether their exercise suits their purpose.

5. CONCLUSION

The first thing to draw attention to in the data collected in the study is that the level of user awareness could be higher. Surveys and interviews show that users can be loaded on the joint areas and injure themselves in the wrong forms with sufficient knowledge.

Table 3. *Comparison of body pain regions*

REGIONS	DAILY LIFE	WORKING ON SPORTS EQUIPMENT
Neck	%29,5	%12,5
Shoulder	%34,1	%37,5
Waist	%52,3	%43,8
Wrist	%9,1	%9,4
Fingers	%6,8	%9,4
Hip	%22,7	%28,1
Knee	%54,5	%43,8
Ankle	%25	%25
Toe	%6,8	%9,4

As can be seen in the comparison of body pain zones, the exercise they do in parking areas did not benefit their daily pain and significantly effect on the level of pain in these areas. In other words, the tools the users use while performing sports activities in public places are must be more suitable.

The reasons why outdoor exercise equipment could be more effective are detailed below.

Leg Strengthening Machine:
There is no option to adapt the device to the body. For this reason, users may work from the wrong angles without realizing it. Forcing the body to carry loads in the wrong position may cause injuries or cause knee and waist problems in the future. In addition, the person is expected to attach his ankles to the iron and lift himself. Here, the resistance applied to the legs may be too heavy for some users and light for others. In addition, problems may arise due to height differences. The iron may remain higher on some users' wrists than others. This will cause the load to be placed differently, and the leg muscles will not work actively and correctly.

Waist Stretcher:
The device could be more robust in terms of control and balance. It can disrupt a person's control mechanism. Possible falls and injuries may occur. Hand grip alignment may only be suitable for some users. An upright posture must be maintained during the exercise, but no element can guide this. Uncontrollability may lead to hip and waist problems in the future.

Bicycle Tool:
The device is inspired by a bicycle, but it is made of metal and can be moved for a prolonged period. It is difficult to use the pedals because they do not hold the foot well enough, and slipping and falling may occur. Since the length cannot be adjusted, waist and neck problems may happen in the long run. If used by a tall user, excessive knee flexion may cause knee problems in the future.

Body Building Equipment:
The product can be considered as an equivalent of the chin-up movement. This movement aims to carry one's body weight and is unsuitable for all strength levels. Each individual's strength level may need to be increased to lift their body. Lifting with the wrong grip in this movement carries the risk of serious injury to the shoulder, spinal cord, and back muscles. This may be triggered by the arm grip distance not being entirely suitable for bodies of all sizes. It can be a risky exercise, especially for the older adults.

Inner and Outer Leg Strengthening Device:
The device focuses on the coordinated work of the arms and legs by moving back and forth. However, since this movement flow progresses very limitedly way on a single axis, it is very susceptible to

disrupting the user's balance. Since the grip of the footrest does not stabilize the foot sufficiently, the angle of the legs may become too broad due to loss of control, and possible injuries may occur.

Elliptical Bike:
The elliptical movement inspires the device. In the movement, the legs draw ellipses in coordination while the arms move back and forth. Considering individuals of different heights using this tool, the ellipses that the legs will turn will be of various sizes, and their angles will also be different. Besides, it is uncontrolled. It is open to possible falls.

Shuttle Machine:
The machine is based on crunches and reverse crunches. However, since the anchors are fixed in place, they may become unusable due to height differences. Moreover, it may cause injuries when used by people who do not know the angle is incorrect.. However, the level of the reference part where the person's back should descend during the sit-up requires a deep opening and closing from the abdomen. Although this angle is unsuitable for all levels, it can lead to injuries.

Arm and Shoulder Exercise Device:
The device focuses on providing arm and shoulder joint mobility by rotating the discs with the arms. It can be interpreted as a successful tool based solely on joint mobility. However, since the angles will vary for users of different sizes, fully efficient movement may only occur for some users.

The same problems have been observed with other outdoor sports equipment. In this situation, public parking areas in residential areas should be well-designed to contribute to the users' health. It has been seen that presenting the sports activities of the users in their daily lives as safe and ergonomically safe, regardless of their age, is essential in terms of body physiology. When the designs were examined, it was seen that they were dimensioned according to the average user dimensions. This makes it difficult for users with different sizes to use. Mechanized solution proposals can be used effectively by users with other dimensions.

Redesigning the instruments with the body pain percentages presented in this study will reduce the physical deformations of the users. In this way, harmony between the product and the user is ensured, and as a result, the tension on the user will be reduced. Thus, the phrase "the task must be compatible with the user," which is frequently repeated during the design training, is applied.

It has been determined that the products do not give feedback on the correct use by the user during use. The user continues to misuse the tool, and as he receives no feedback, he will realize that he needs to use the tool correctly. This is another point that needs to be added to guide the user.

Another issue reached by collecting data is that exercise tools need to motivate users to exercise. There are unforeseen product deficiencies related to seasonal conditions and material selection. Examples of this are the accumulation of water in the footsteps or the slipping of these parts when snow; the parts to be held can get very cold because they are metal, and the areas that will come from the waist and back are hard-to-use units in the form of metal strips and the associated squeaking is an example. It is not possible for users to exercise safely and efficiently on these devices under these conditions. This has a large negative impact on their motivation to exercise in these areas.

In light of all the data obtained in the study, it was stated that the park exercise equipment was not designed with ergonomics in mind, and changes were needed to selecting materials. It has also shown that the design details should be designed to make the user feel safe, guide them correctly, and increase their motivation for exercise.

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PART B: ART, HUMANITIES, DESIGN AND PLANNING

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Lodgings and Settlements as 'Happiness Factories' in Turkish Architecture in the Republican Era[1]

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Abstract

Atatürk's vision, as reflected in the Republic Proclamation, aimed to integrate the movements of modernity into daily life. Great efforts were made to adapt society to the new face of the country, and these efforts were reflected in architecture. One such reflection is lodging house typology as a housing supply. The 'lodging house' model emerged with Robert Owen's principles of sustainable social life in the New Lanark settlement in the 19th century. According to him, lodgings should meet different needs, such as health, education, and recreation, which can affect workers working efficiency. In our country, lodgings were first built in the late Ottoman Empire to keep palace employees close to the palace. However, it was only with the proclamation of the Republic that the lodgings were produced as settlements. The study's main aim is to examine a series of lodgings developed in the Early Republican Turkish Era (ERTA) according to their inclusion of spaces for sustainable social life opportunities. It also tries to search for the link between the spaces that the settlements propose and the users' life satisfaction and happiness. The scope is limited to the Alpullu Sugar Factory and Nazilli Basma Factory Settlements, the lodging settlements built in the ERTA. The study's method is to analyze the mentioned lodging settlements and show that these settlements promise sustainable social life and housing, with health, education, and recreation facilities. New Lanark, Alpullu Sugar Factory, and Nazilli Basma Factory Settlements' site plans are redrawn, compared and analyzed to show their facilities. Also, the opinions of employees and their relatives who lived on these campuses are included. In this way, an attempt was made to establish a link between the spaces suggested by the settlements and the life satisfaction and happiness of the users. In conclusion, lodgings that propose sustainable social life spaces have high user satisfaction, demonstrating these settlements' success in meeting their users' needs and expectations. Lodging settlements from the ERTA, with their unique architectural qualities and sufficient social facilities, operated like a 'happiness factory' by increasing the satisfaction level of the employees during their periods. They played an essential role in constructing and consolidating the 'Nation-State' understanding.

1. INTRODUCTION

Lodgings, defined as social housing offered by an enterprise to its employees, are generally included in the literature as campuses that include socially sustainable living facilities, especially for purposes such as increasing the enterprise's attractiveness or increasing loyalty to prevent employee turnover. Since the 19th century, when these types of campuses first emerged, many examples have shown that the socially sustainable living facilities within the lodging campuses create high satisfaction among the enterprises' employees and the campus users.

In our country, during the Republican Period, lodgings with social facilities were designed in factory campuses in line with the industrialization and social transformation desired to be created. In the literature, some studies examine these settlements from different aspects, including production and

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administrative structures, housing units and social facilities. When the studies concerning architecture and planning practice are analyzed, excluding the studies belonging to the fields of political sciences that examine the economic and development policies of the Early Republican Era, it is determined that these studies are concentrated in five main frameworks.
The first of these frameworks is the study of urban studies. Sönmez and Arslan Selçuk (2019), Asiliskender (2012), Eldeş (2019) and Sönmez and Baran (2020) try to search for the interaction between the city and the spaces of industrialization [1], [2], [3], [4].

The second of these frameworks is the historical perspective within the scope of architectural history; Eldeş's study completed in 2019, which evaluates the Kayseri, Ereğli, Nazilli, Bursa, and Malatya factory sites of Sümerbank, and Doğan's study published in 2007, which assesses the Sümerbank Nazilli Basma Factory, can be included in terms of providing essential data on the factory's historical process [3], [5].

Asiliskender's (2012) study on the Kayseri Tayyare Factory and Sümerbank Kayseri Settlement can also be classified as a historical documentation study [2].
Doğan (2022), Mülayim and Kaprol (2016), Kaprol and Minez (2009), and Durukan Kopuz and Tetik (2016) also try to search for life in these settlements from a historical perspective [6], [7], [8], [9].

There are also studies within the framework of documentation with the help of surveying and restoration; Durukan Kopuz's (2018) study, which evaluates the Alpullu Sugar Factory campus, is vital in documenting many campus buildings with architectural expression techniques and can be evaluated as a third framework [10]. Studies which suggest re-functioning the factories and their settlements should also be mentioned. Aydın and Aksoy's study, published in 2012, proposes different usage alternatives for the social facility building of the Sümerbank Nazilli Basma Factory and can be considered within the re-functionalization studies [11].

Lastly, Özkan Altınöz (2015) and Coşgun and Aydın (2011) are focused on these settlements and lodgings according to housing policies [12], [13].

As a result, it can be mentioned that studies in literature are concentrated on topics such as:
- Factories and their relation with the urban fabric;
- Historical perspective of the factory settlements;
- Documentation studies of the factories and their settlements;
- Re-functionalization studies of factories and
- Housing policy and lodgings.

When the literature on Early Turkish Republican Era, according to factories and their settlements is analyzed, in the context of architecture and planning discipline, no study focuses on these factories' architectural qualities' promise as a socially sustainable living facility. Also, there is a gap in the literature questioning the link between the spaces the settlements propose and the users' life satisfaction and happiness. So, this study tries to fill this gap by searching lodging settlements in terms of the psychological and sociological effects of architecture and planning on people and society, by focusing on user satisfaction and 'happiness'. It aims to discuss the satisfaction of the users of factory campuses, where the housing need due to industrialization is met through lodgings and which offer socially sustainable living opportunities in the context of 'happiness'. For this reason, a series of lodgings developed in the Early Republican Turkish Era is examined according to their inclusion of spaces for sustainable social life opportunities. It also tries to search for the link between the spaces that the settlements propose and the users' life satisfaction and happiness. From this perspective, the study seeks to contribute to the literature uniquely.

Within the scope of the study, based on the state-sponsored industrial movements that have been implemented since the early years of the Republic and the idea of social transformation targeted simultaneously with this industrialization, the so-called "happiness factories" model offered to the employees by the lodging settlements will be examined through "Nazilli Basma Factory: Sümerbank"

and "Alpullu Sugar Factory: İstanbul ve Trakya Şeker Fabrikaları Türk Anonim Şirketi", two examples belonging to two enterprises established with state support.

2. METHOD

There are two main methods of study. First, a literature review was conducted on socially sustainable living and housing settlements. The examples of lodging settlements that offer socially sustainable living opportunities and the social structure that led to the emergence of these examples will be discussed in the literature review. As a result of the literature review, the New Lanark campus, which was designed by considering the satisfaction of its users and residents on the axis of socially sustainable life, is discussed in detail through the sample analysis method and the literature review on the social structure that caused the emergence of the campus is mentioned. In particular, the main reasons for establishing Robert Owen's New Lanark settlement, the methods developed against the social deformation experienced in its period, and the opportunities offered by lodging settlements through the social opportunities that emerged in line with these methods will be evaluated. Then, the Alpullu Sugar Factory and Nazilli Basma Factory Settlements are analyzed, and it is shown that these settlements promise sustainable social life and housing, as well as health, education, and recreation facilities. New Lanark, Alpullu Sugar Factory, and Nazilli Basma Factory Settlements' site plans are redrawn, compared and analyzed to show their facilities' similarities.

Then, based on the principles put forward with New Lanark, a reading based on oral history studies on personal narratives will be made on the life offered by the Alpullu Sugar Factory and Nazilli Basma Factory Settlements, which belong to the companies mentioned above, in line with Atatürk's aim of creating a new national identity.

The motivation of this study is the hypothesis that meeting the housing need with included social facilities triggers social transformation, that housing also has a social power with its social life opportunities, and that there is a link between the happiness of the inhabitants and the quality of life.

Lodging houses built in the Turkish Republican Era were selected as a sample because they set an example with their effects on social transformation and their inhabitants' "happiness" experiences. It is aimed to contribute to the literature by analyzing these buildings in the context of socially sustainable living opportunities. The opinions of employees and their relatives who lived on these campuses are included to prove this hypothesis. In this way, an attempt was made to establish a link between the spaces suggested by the settlements and the life satisfaction and happiness of the users.

3. LODGING MODEL AS SOCIAL HOUSING SUPPLY

In periods when cities receive mass migration, there is an intense housing problem in the cities as a result of the migration phenomenon. To solve the urban poverty and housing problems that arise due to this situation, mass housing offered by the authorities (local or central governments) has found its place in the literature as "social housing". The first examples of social housing production as a solution to urban poverty and housing problems arising as a result of migration to the city emerged in 19th century England, where there was an intense migration from rural to urban areas due to mechanization in agriculture and the establishment of industrial cities [14]. However, before the Bethnal Green area of London, which is known as the first example of social housing produced by the authority (a series of social housing started in 1890 and delivered in 1900), the New Lanark settlement, which emerged as an experiment in socialism by Robert Owen at the beginning of the century, was realized.

3.1. Lodging Model as Social Housing Supply and First Examples in the World

The housing problem has been a major sociological problem throughout history, especially during rapid migration from small settlements to urban areas. In the 19th century, there was an intensive migration from rural to urban areas with increased agricultural industrialization. Urban poverty and the housing problem emerged as a result of this migration. Local or central governments' production of social

housing to find solutions to this problem created a basis for spreading the lodging model. In addition to the social housing offered by the governments, the Val-St Lambert Glass Factory (1825), Houdeng-Bois de Luc Quarry (1838), and Fleurg-J.L. Godin Paper Mill (1840) lodgings were first realized in Belgium to solve the housing problem for the workers of the factories located on the outskirts of the city [13]. However, Robert Owen realized the first example of the self-sufficient "Happiness Factories," the subject of this study, at the New Lanark Spinning Mill in Scotland (Figure 1). Şahin (2023), in his research titled "Modern Utopian Thoughts' Quest for the Ideal City", references the physical conditions of 19th-century cities. The most important of these references are the ones he cites from Mumford (2007) and Ragon (2010) on the physical conditions of 19th-century cities. These physical conditions are centred on the towns being far from sanitary and harming human health. These negativities are shaped around factors such as air pollution, inadequate access to clean water, and epidemics spreading rapidly due to sewage problems [15].

Another issue that Owen addressed in his articles titled "A New View of Society, or Essays on the Principle of the Formation of the Human Character", which he started to publish in 1813, is the role of environmental factors in the formation of human character. In these articles, Owen argues that social deterioration can be prevented by intervening in environmental factors [16]. In his articles, Owen proposed several reforms to protect the rights of workers struggling with working conditions up to 16 hours, child labourers who had to work at a young age, and diseases due to the unsanitary conditions of the period [17]. These reforms included large-scale goals such as reducing working hours, directing children to education cooperatives, and combating epidemics.

To understand Owen's reforms on working conditions in 19th century Britain with New Lanark, it is first necessary to examine Owen's perspective on the existing conditions. In a period when the impact of industrialisation and industrial cities on society was intense, Owen began his work "The New View of Society and the Lanark Report" [20] with an address to the public and the managers of industrial enterprises. Especially in his address to the managers, he talks about their two most precious capitals: living and non-living machines. By inanimate machines, he means artificial machines, while by living machines, he means workers, who are indispensable to ensuring the continuity of production. In the oration, he states that employers make a mistake when they make all their investments to keep inanimate machines running and that if they invest in their "living machines", that is, in their workers, the employers themselves will benefit.

Explaining the contribution of the efficiency of the workers, whom he refers to as "living machines", to the continued functioning of production, Owen mentions several efficiency-increasing substances that he has taken from inanimate machines. These substances also constitute the basis of the approach Owen realized in Lanark (Figure 1). He gives examples of steps in these substances, such as keeping inanimate machines intact and robust, not interrupting their maintenance and repairs, and lubricating them regularly to prevent wear and tear. Based on this example, he also applies articles that will affect society by starting from individuals, such as the necessity of approaching living machines with kindness to keep them away from the social erosion that clouds their minds and the necessity of paying attention to the sanitation of their living environments and their health to keep their bodies in working condition.

Robert Owen proposed a settlement in New Lanark so that all the inhabitants were satisfied with their living conditions and to establish a society where everybody was happy to be involved. In Figures 1 and 2, the New Lanark settlement can be seen with housing units as lodgements, educational and other facilities, and security units.

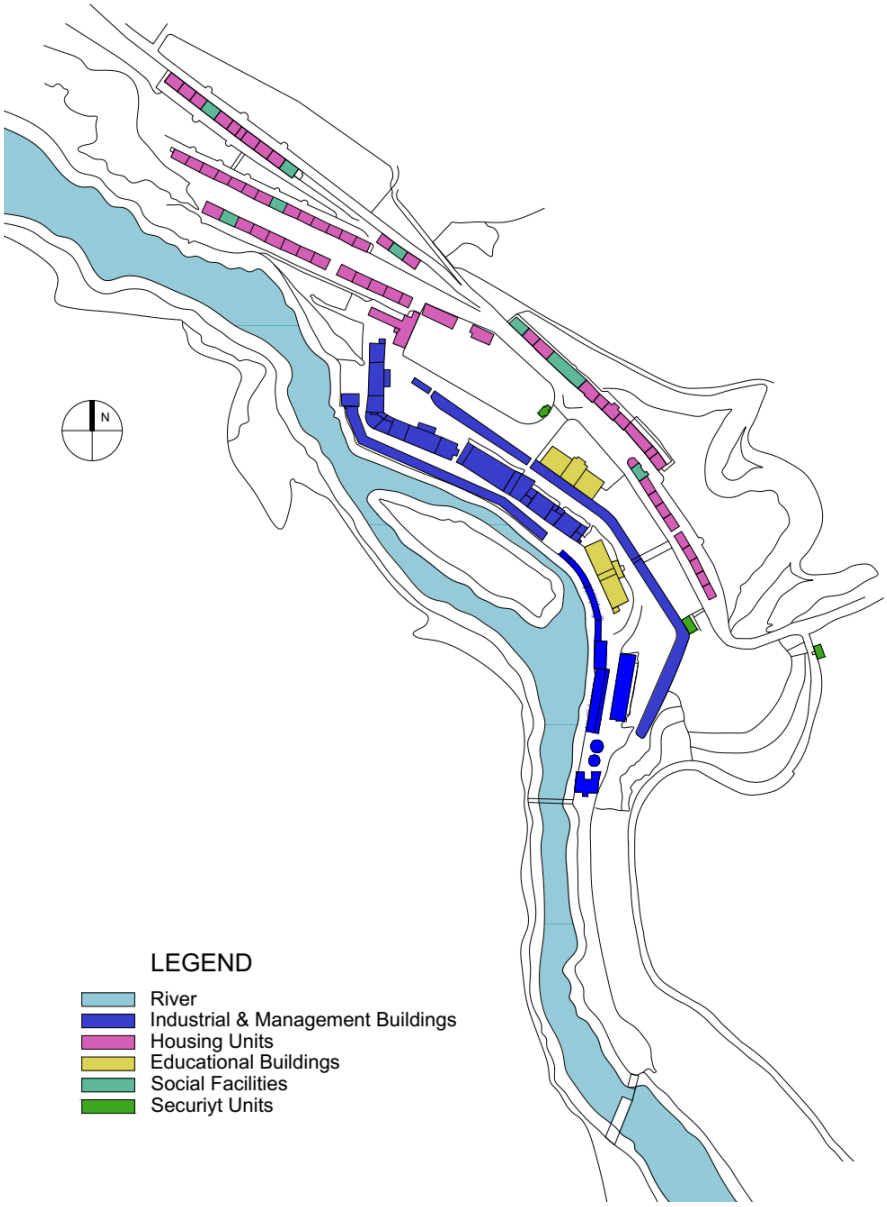

Figure 1. *New Lanark Site Plan [18], redrawn by the Authors.*

Figure 2. *New Lanark aerial photography [19].*

3.2. The Lodging Model as a Social Housing Supply and the First Examples in Turkey

The first example that can be considered as an example of a lodging house built in the city during the Ottoman Period is the Akaretler Row Houses. The row houses were built by Sultan Abdülaziz in 1875 by the architect of the period, Sarkis Balyan, as rental housing to generate income for the Maçka Aziziye Mosque (which was not completed after Abdülaziz was deposed). From the reign of Sultan Abdülhamid II onwards, these residences were allocated to meet the housing needs of Dolmabahçe Palace employees [21]. However, these row houses are only for housing needs and do not include socially sustainable living opportunities. When the enterprises of the Ottoman period that allocated lodging to their employees were examined, the places where railway stations were located were included in the literature. As mentioned in the European and British examples, providing housing with lodging is directly related to industrialization. However, the pace of industrialization in the Ottoman period differed from that of Western countries. Due to political and socio-cultural reasons, only after the second half of the 19th century did the Ottoman Empire try to catch up with the acceleration of industrialization and mechanization in production. Again, in this period, railway lines were needed to provide logistics for industrialization. However, due to the financial situation at the time, the state did not have the opportunity to make such an investment. Western countries realised the railway lines in the Ottoman lands with foreign capital needed lines to pass through these lands due to their industrial activities [22].

Between 1850 and 1922, stations and station chiefs were established by Western countries in the provinces, where approximately 8500 km of railways[22] in the Ottoman lands covering Anatolia and Rumelia [22] provided transportation. In these stations, a supply of lodging houses, primarily workers' wards and officers' dwellings were realized to meet the housing needs of the employees. However, it is observed that these lodgings were designed and produced based on the investing Western countries' architectural design styles and strategies.

4. LODGING COMPOUNDS OF THE REPUBLIC OF TURKEY

In the 20th century, the Early Republican Turkish Era, with Mustafa Kemal Atatürk's vision, as reflected in the Republic Proclamation, aimed to integrate the movements of modernity into daily life. Great efforts were made to adapt society to the new face of the country, and these efforts were reflected in architecture. One such reflection is lodging house typology as a housing supply. These lodgings were developed starting with the Early Republican Period, lodgings with social facilities were designed in factory campuses in line with the industrialization and social transformation desired to be created. Many state-funded industrial settlements were established. Sümerbank Nazilli Basma Factory and Alpullu Sugar Factory are selected as the scope of this study. To understand the importance of these settlements during the founding years of the Republic of Turkey, it is first necessary to examine the significance and meaning that the state attached to industrial movements during this period.

On February 17, 1923, the Izmir Economic Congress laid the foundation for the industrial policies to be followed for the development of the Republic. In line with the decisions taken at the Congress, the Incentive-Industry Law enacted on May 28, 1927, paved the way for supporting enterprises that would operate in the industry field. However, due to the economic depression that took place in 1930 and affected the whole world, the investments expected to be made by private enterprises could not be realized. As a result of all these conditions, industrial investments, which Atatürk considered essential for the Republic's development, had to be made with state support [23].

In line with all these necessities, the "First Five-Year Industrial Plan" report, which was prepared in 1932 and entered into force in 1934, mentioned the establishment of primary industries such as weaving (cotton, hemp, wool), mineral processing (iron-steel, copper, sulfur), cellulose (paper), stone-earth (glass, cement) and chemistry (artificial silk, rose oil, phosphoric acid, superphosphate). Completed in 1936, the "Second Five-Year Industrial Plan" emphasized sectors such as mining, shipping, power plants, food industry, machinery industry, chemical industry and soil industry, which were not sufficiently emphasized in the first plan. In both plans, there is information on the areas where the

factory settlements of the industrial sectors to be emphasized will be established and the facilities they will include. The first plan shows small Anatolian cities along the railroad line as locations for industrial establishments. For the industrial establishments in the second plan, large settlements where coal-based power plants can be considered as the focus are envisaged [24].

At this point in the study, it would be appropriate to introduce the concept of "Social Sustainability", frequently mentioned in the following sections. Social sustainability, which was only recently defined at the beginning of the 21st century and is one of the United Nations' 2030 development goals [25], has been practised long before today. Founded in the 19th century by Owen and in the 20th century under the leadership of Atatürk, the socially sustainable lodgings in the factory compounds of state-funded industrial organisations are models that set an example for a life we are still trying to achieve today.
While evaluating the life in the settlements that are the subject of the study, like Owen's goals mentioned in the previous sections, Atatürk also had some goals regarding social life and social transformation. To list these goals in a few items: enlightenment through a rational approach to knowledge and art, structuring the economy, the understanding of the nation-state and the institutionalization of democracy that develops with this understanding, and finally, the establishment of a free citizen profile shaped within the framework of laws [26].

Studies in the literature link Robert Owen's theory and practice in New Lanark with the life Atatürk wanted to realize in the factory compounds of the Republican Era. These studies include Çağatay Emre Doğan's study titled "Formation of Factory Settlements within Turkish Industrialization and Modernization in the 1930s: Nazilli Printing Factory" [27] and Gülten Dönmez's study titled "The Effects of Republican Era Worker Settlements and Lodging Areas on the City: The Case of Bursa" [23] can be cited as examples. As in these studies, it is impossible to ignore the similarities between the principles laid out by Owen in the Lanark Report and the life modelled by Atatürk in the factory settlements of the industrial organizations of the Republican period. For this reason, the life constructed in the factory compounds of the state-sponsored industrial enterprises of the Republican period, which will be analyzed in this study, will be evaluated through the principles set forth by Owen.

In the first and second five-year industrial plans, a number of parameters were determined for the location of new factories, and these parameters were primarily adhered to in the selection of the factories established afterwards. Some of these parameters include energy access, ease of logistics (railroad connection), and compatibility of the region's climate chosen to produce raw materials [28].
In line with these parameters, the two settlements, Alpullu Sugar Factory and Nazilli Basma Factory selected as samples are examined; Alpullu is located on the railroad network and is also a highway crossroads. The land's flatness and large area make it fertile to construct sugar beet fields and buildings. Its location along the Ergene River is also essential for meeting the water needs of the beet and beet sugar production facility [9].

Nazilli, on the other hand, is a transit centre to neighbouring provinces and districts with easy access via the railway network. There are sufficient coke coal reserves nearby. In addition, its proximity to the Büyük Menderes River is favourable for the factory's operation and cotton production, which is needed as a raw material [29].

4.1. Social Sustainable Living Opportunities of Alpullu Sugar Factory Campus

In this section of the study, the life designed and lived in the Alpullu Sugar Factory Campus, which aligns with the goals defined by Atatürk for constructing a new nation, will be discussed. However, to understand this life, it is first necessary to examine the physical facilities that allow it to be lived. Within the scope of these facilities, the structures that make up the campus and their intended use will be discussed.

Since the campus is a production facility, it houses facility structures such as production, treatment, storage and administrative buildings. However, when analyzed in terms of social life opportunities, which is the subject of the study, Ergene Pavilion and Büyük Pavilion buildings, which can be

categorized under the title of "social facility", are encountered. Of the two mansions located in the same garden, the building called Büyük Köşk contains social use units such as dining and meeting halls. At the same time, Ergene Köşkü can be considered as an accommodation unit serving the Büyük Köşk. The room where Atatürk stayed on December 20, 1930 and its contents are preserved in the Ergene Pavilion [8]. Apart from this, as seen in Figure 3, the cinema building, summer cinema area, casino building and sports facilities (Turkey's first mini golf course and swimming pool) are other buildings that can be evaluated within the scope of social facilities (Figures 3 and 4). In addition, lodging buildings, education buildings, and health structures with infirmary are other buildings on campus that serve factory workers and their families.

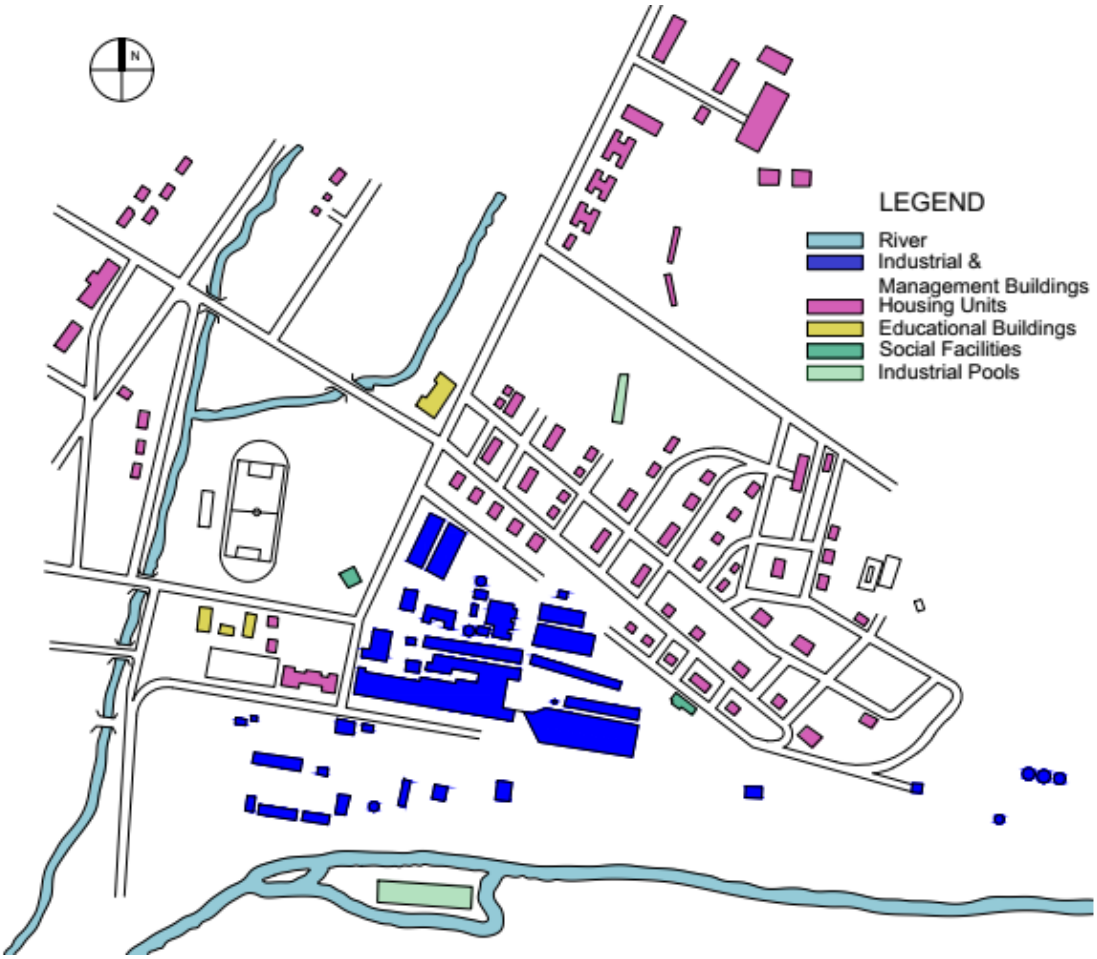

Figure 3. *Alpullu Sugar Factory Site Plan [30], redrawn by the Authors.*

Figure 4. *Alpullu Sugar Factory aerial photography [31].*

Mülayim and Kaprol quote Emrullah Beydeli, a former Thracian peasant who became a new industrial worker with the opening of the factory, about the lifestyle in the factory campus, each of which is part of the social sustainable living opportunities that are aimed to spread from the factory campus to the society in general, as follows:

"I was fifteen when I entered the factory……They hired me right away; I entered this breadwinner from construction. But then I went to school. Do you know the factory had a school? This factory is a job in this Thracian plain and a science. My father was one of the first to plant beets. Hungarian taught us.…. The factory had sample fields. I would go and watch how they were doing it. Then I would tell my father in the village. Then, he would ask me for information again. …Will the seed be divided and buried in the soil, or will it be whole? I would go and look; I would tell my father... Gazi said the country will develop. The factory was established, the school came, the agriculture, we learned the best of agriculture, and the money went into the pockets of the villagers. Before, we used to sit idly in the café for eight months. We became workers here. We became industrial workers, not farmhands or labourers. We saw electricity in the sugar factory in Alpullu. What is electricity? It's light, light… Wouldn't you work for the light? …The factory is civilization and a school..." [7].
As can be understood from Emrullah Bey's narrative, the factory and its compound were the pioneers of the weaving of civilization and modernism into a peasant ring.

Figure 5. *A Lesson in Primary School [7].*

The 'happiness' that factories and their lodgings leave in the workers and lodging residents' minds who once worked in the factories is reflected in the current social media accounts of those who lived there. As an example of this, Ms Necla, who was born in 1945 at the Alpullu Sugar Factory in the Alpullu town of Kırklareli, expresses her life in the lodging with the following words:

“I was born here and went to primary school here. I went to Babaeski for secondary school until our secondary school was built. My mother (1927) also studied at the same school as me. In Alpullu Dereboyu, we had four houses of the factory, a bakery, a farm, an old garrison from the Ottoman period, which we call a palace, a casino in the area called Teliçi, a tea garden, and a little further on, a railway station and a station restaurant... I lived here until I was 18 years old. My father was a foreman in a sugar factory. After I got married, I went abroad. I lived in a town near the Netherlands for seven years and then in Istanbul for 20 years. I worked as a tailor at that time. After marrying off my daughter, I returned to the town where I was born.” According to Ms. Necla, the process in which beets are processed is called a "campaign." When this process is over, campaign balls are organized to celebrate. Ms. Necla can never forget these balls, which she witnessed with the eyes of a child, and says, “I always remember those times happily and peacefully. There was a self-sufficient system in Alpullu," conveying the happiness of their time [30].

4.2. Social Sustainable Living Opportunities of Sümerbank Nazilli Basma Factory Campus

The situation at the Sümerbank Nazilli Basma Factory is no different from Alpullu. The factory was inaugurated on October 9, 1937, with the participation of Atatürk himself. Within the Fabrika campus, buildings serve other functions, such as production areas, housing units, and social facilities. The production areas include the main buildings of the factory, warehouses, warehouses, garage, administration building and directorate (Figures 6 and 7). Within the housing units are clerical apartments and lodging buildings for different functions belonging to artisans and workers. In addition, there is a nursery building containing units such as a nursery, post office, personnel office and a social facility building opposite it, which includes cinema and canteen functions [6]. In addition to all these buildings, a railway line built by the factory is used for transportation between the city centre and the factory. This line, called "Gıdı-Gıdı" by the factory residents and the public, is used both for the transportation of workers who do not live in the factory to the factory and for product shipment. In addition, the power plant within the factory compound was planned and realized to provide electricity to the whole of Nazilli [6].

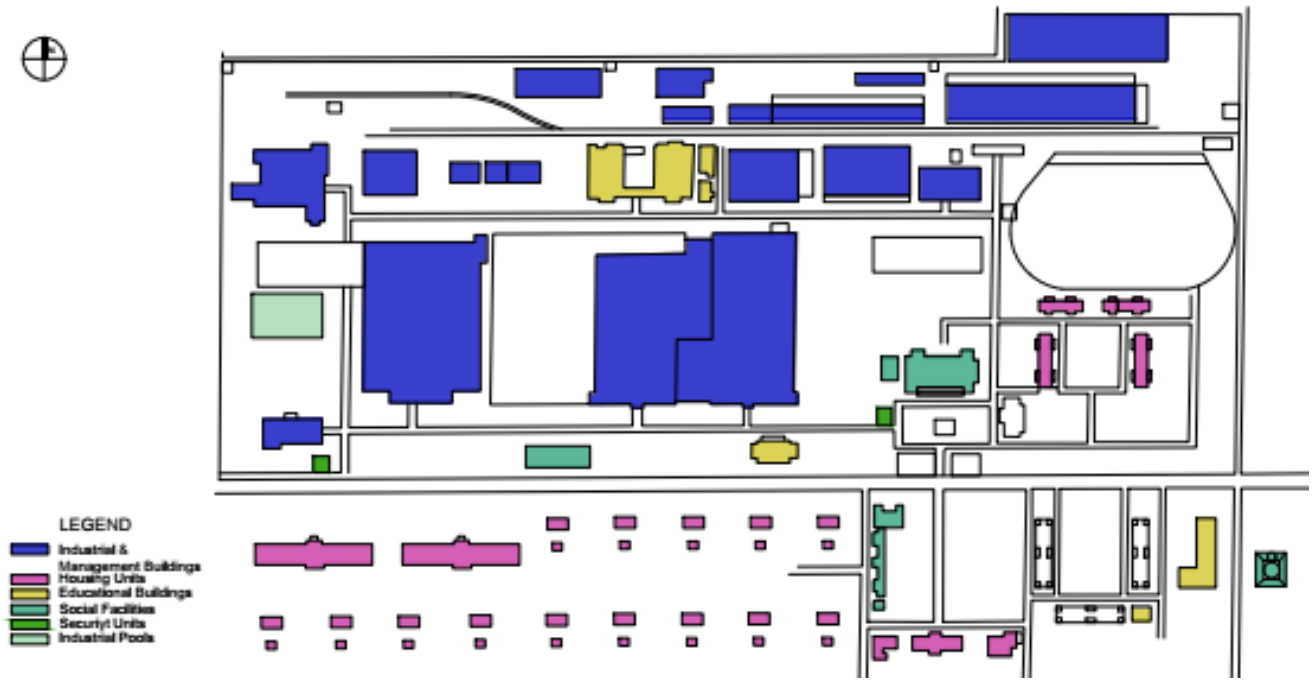

Figure 6. *Site plan of Nazilli Basma Factory before 1950 [32] redrawn by the Authors.*

Figure 7. *Nazilli Basma Factory aerial photography [33].*

Çağatay Emre Doğan [6] edited the notes of a factory worker in his "Nazilli Basma Factory Settlement: History and Life" study and conveyed as follows:

"Do you know how a happy worker spends 24 hours in the factory? Today, I finished the third course and received my diploma. It has been exactly one year since I entered this factory as a worker... When I came here, I could not read or write... The week I entered the factory, our supervisor called me to him. He had a file with my picture on it. This was my file. My whole life is in it." "Hasan, you can't read or write. You are young. To be a good citizen, you must learn to read. You will start the course tonight after work," he said. "We hope all citizens visit our beautiful, cosy, modern factory. Remember us by wearing our fabrics. We have no pain. We gladly prepare them for you from the bottom of our hearts. We ensure that the goods are good and that not even a single strand is crooked. Because we know that the factory was built for all the citizens of this country and that from the sound of its machine, the song of the happiness and freedom of our country is composed." [6].

Born in 1956 to a family of factory workers, Ms. Filiz shares her memories of the factory as follows:

"Being a Sümerbank employee was a privilege at that time. The lodgings, the guest house, the relief fund, and the sports facilities were all valuable things given to the employees. The ballroom was a movie theatre for children during the day and the most beautiful and new movies for adults at night. The hall was a theatre and a wedding hall; the Republic Balls were held there. There was also a clubhouse where women would gather during the day and have their day. Our train was free of charge to the public. It used to take workers three mails, and students used to commute by this train if they were studying in Upper Nazilli. The tea garden was spotless and decent; not everyone from outside could come to this garden, but they could be guests under the name of someone from Sümerbank, which made it a secure facility. There was a soccer field, tennis courts and basketball and volleyball courts. The aid fund provided members with food, household goods, etc., at affordable prices. It also had its bakery, and bread could be purchased from the bakery and the sales office. These were the most beautiful and special days. Sawdust to be burned in the lodgings was also provided by Sümerbank at affordable prices. Courses were organized for the children of Sümerbank families, contributing to their education. Various courses were organized for women (I also attended the flower course here), and they were trained to contribute to the family. Being a member of Sümerbank was the envy of everyone in those times.".

Figure 8. *A scene from the theater hall [34].*

Figure 9. *Factory women attending the ball [35].*

5. CONCLUSION

The goal of social transformation requires radical changes touching many fields. When the need for such a radical transformation arises in line with the current conditions, support from many fields and disciplines is inevitably required. In the 1920s and 1930s, immediately following the founding of the Republic of Turkey, when the idea of creating a modern society was at the forefront, the disciplines of architecture and planning were successfully used as tools for this transformation.

In the Early Republican years, administration took timely and correct steps to adapt to industrialization and industry-oriented production, which was a necessity of the age. These settlements, where industrial establishments were used to create a modern nation, pioneered social transformation by setting an example with the lifestyle they offered.

In this study, in which the contribution of architecture and planning disciplines as mediators of social transformation is examined, New Lanark, an earlier settlement produced for similar purposes by Robert Owen, who is considered one of the pioneers of sociology today, is defined as a model in terms of the process and the physical facilities it contains. Then, similar social life opportunities were sought through New Lanark in the Alpullu Sugar Factory, and Nazilli Basma Factory settlements selected as samples. Finally, to predict the effects of social living facilities on society and individuals, the relationship between socially sustainable living facilities and the happiness of individuals and the construction of a new society with happy individuals is examined by including user experiences.

The narratives of the inhabitants of the two settlements selected as the sample, Alpullu Sugar Factory and Sümerbank Nazilli Basma Factory, reveal that the target audience includes not only the employees and their families living in the factory settlements but also the entire population living in the settlements' vicinity. In line with all these conclusions, it has been seen how effective the use of studies within the scope of architecture and planning disciplines towards this goal has produced in times when social transformation is an inevitable need.

New Lanark, Alpullu, and Nazilli settlements offer similar socially sustainable living opportunities. This study also reveals similarities between the opportunities provided by New Lanark, Alpullu, and Nazilli campuses and their architectural reflections. It shows that places that aim at employees' “happiness” in different geographies and offer similar social opportunities can achieve high sustainability.

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PART B: ART, HUMANITIES, DESIGN AND PLANNING

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The Relationship of Movie Theater and Audience: The Case of Ankara Büyük Sinema[1]

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Abstract

Throughout the history, cinema and architecture have evolved in different ways by establishing a direct connection with the social, political or cultural structure of the period. The establishment of the Turkish Republic led to the construction of numerous buildings in urban and public spaces, aligning with the new form of government. Simultaneously, radical changes occurred in cultural and entertainment structures as another facet of westernization. Starting from the 19th century, the role attributed to movie theaters, upon entering Ottoman territory, underwent significant changes throughout that period. Cinema venues became a symbol of modernization. After Ankara was declared as the capital of the Turkish Republic, cinema venues, which had been concentrated in Istanbul before, began to gain more space in the city with the effect of the changing cultural/artistic environment, and in time, a city-specific cinema-going culture emerged in Ankara. From the 1920s to the present day, the importance of cinema venues in Ankara have increased for both the memory of the city and the memory of the audience of that period. Although there are numerous studies on cinema venues in architectural literature, it is challenging to find studies specifically addressing the impact of architectural structure on the audience's viewing experience. Since the oral history research is sampled with ordinary people, there is a chance for the exploration of unwritten historical events or specifying uncertain dates of those to be included in the literature. Cinema venues are not only places where screenings are held, but also places where the experiences are embodied in the memories of the audience. For this reason, this study will analyze data from oral history studies conducted by researchers in the field of cinema studies. It is aimed to examine the effects of the cinema environment of Ankara and the cinema buildings of the period on audience memory. Since the most noteworthy movie theater in the memory of the participants was the *Büyük Sinema*, this study aims to investigate how that building remains in the audience memory and how the architectural aspects affect audience experience.

1. INTRODUCTION

Cinema places are significant public spaces which provides entertainment and socialization opportunities, and cultural practices to individuals. These spaces play an important role in the shared cultural history of society. Those are the places where individuals' daily life practices take place. Therefore, they offer cultural cues and provide insights into individuals' lives and cultures. Cinema spaces serve as arenas of interactive communication where past life experiences and cultural activities are manifested. They should not be perceived as mere physical spaces; rather, they play a crucial role in memory formation, influenced by the social and cultural conditions of society.

Memory is socially shaped, even though it appears to be individualistic. Social memory encompasses a wide range of individual memories and personal memory. As Connerton (1999) emphasizes, the act of remembering, no matter how individual, is related to the world of thought that other people have. This world of thought develops through the mediation of individuals, places, histories and language; that is, through the whole material and immaterial life of the society in which we live or to which we belong[1].

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Therefore, the term "collective memory" does not carry a figurative meaning. Memory is not only based on the memories of the individual, but is also formed by the accumulation of shared experiences. Therefore, even if the act of remembering is influenced by the characteristics and perspective of the individual, social influences are largely determinative. Assmann (2001) talks about two types of social memory: communicative memory and cultural memory. Communicative memory encompasses memories of the recent past and consists of memories that individuals share with their contemporaries [2]. This type of memory includes short-term, generational and individual memory [3] Cultural memory, on the other hand, focuses on specific points of the past that go beyond daily events and allows memories to gather around symbolic figures. According to Assmann, cultural memory is a form of collective memory and this type of memory has a symbolic structure that can be transmitted from one generation to another [2]. Sturken (1997) defines cultural memory as "shared memory outside the official historical narrative, enriched with cultural meanings and cultural products". What stands out in cultural memory is not the actual history but the remembered history [4]. From a collective perspective, according to Halbwachs (1992), memory is "not a given but a socially constructed notion"[5]. In this context, memory has a community-based aspect. It is a form of memory and remembrance shaped by the relationship of the individual with a group or community and the perspective, shared values and cultural practices that this relationship reveals, rather than the individual's existence on his/her own. Michale Schudson (2007), similar to Halbwachs, argues that memory is a collective phenomenon because it is primarily associated with a set of cultural practices and institutions such as institutions, rules, laws, standardized practices and records rather than individual human minds [6].

Collective memory is a dynamic phenomenon shared by members of a community that shapes their past and present. In the words of Pierre Nora (2006), "Memory is always life itself, produced by living groups."[7] Nora, argues that memory constitutes history. In this context, the concept of memory spaces gains importance. According to Nora, sites of memory can resolve the ambiguities inherent in both memory and nation through their presence and their effects on reality. Sites of memory encompass not only tangible and material phenomena, but sometimes tangible elements such as memorials to the dead, national archives, and sometimes human memory based on abstract foundations such as lineage, race and religion. The oral history work used in this study overlaps with Nora's concept of memory sites. While concrete memory sites such as newspapers and archives are referred to, human memory also refers to abstract memory sites [7].

For many years, cinema has done its historiography through directors and films. However, since the 1980s, it has been realized that cinema is a broader and layered social event. For this reason, a new idea of film historiography was put forward. Since then, researchers have included the narratives of ordinary people in historiography through the oral history method. While the new cinema historiography includes studies on the consumption and circulation of films and cinema as a field of socio-cultural change, it also includes micro-historical research on places of cinema exhibition [8]. Oral history emphasizes that events are ordinary and belong to everyday life. It is accepted as an important source for the preservation of collective memory and the reconstruction of cultural heritage. It transcends the limits of power-centered historiography and offers a perspective that does not ignore the history and experiences of ordinary people. Thompson explains oral history as follows: "it is a research method that contributes to the construction of the histories of societies by extracting and evaluating personal testimonies or experiences of a certain period from the depths of memory, and by compiling memories of all kinds of human relations, domestic lives, mother-child relationships, changes in small settlements, the history of everyday life, it provides information that written history cannot detect. It is therefore a type of history built around people" [9].

According to Traverso (2009), both history and memory arise from the same concerns, and what they share in common is the assimilation of the past. The primary source that assists history in assimilating the past is memory itself, that is, the witnesses of the past [10]. Witnesses of the past can convey more than official history as they experience events themselves. From this perspective, the method of oral history becomes more comprehensible, because oral history reveals the unwritten and offers an alternative historiography that draws strength from the memory of witnesses. In addition to transforming the content

and purpose of history, oral history also opens up new areas of research. The subjects of research are no longer the worn volumes of old catalogs [9], but living people.

Movie theaters embody the memory of a society and bear the imprints of its past. Consequently, movie theaters should not solely be viewed as venues for passive movie-watching; they also serve as vital spaces for social interaction, shared experiences, and the strengthening of cultural bonds. Hence, understanding the social and cultural value of movie theaters is important for understanding the history of cinema and the pasts of societies [2].

In the interviews conducted by the researchers with the audience of the period, it was revealed that the cinema experience is not remembered apart from of the place. These places play an important role in the shared cultural histories of societies. They are basically the places that shape the memory of a society and carry the traces of the past. In this context, movie theaters cannot only be considered as places where movies are watched. They are also important places where individuals interact socially, have common experiences, and strengthen their cultural ties. The cinema space also stands out as a "communication space" that differs from "place". People transfer their powers of communication to the space, making it a place of communication as well [8].

Memories of the cinema experience are usually associated with the movie theater itself. The smell of the movie theater, its atmosphere and the associations it creates with the movie watched together become vivid memories in people's minds. Therefore, movie theaters are important not only as a screening venue, but also as a social platform and a place of social interaction. According to Paech and Paech (2000), movie theaters are also valuable as a space that reflects the cultural fabric of society and open people up to different perspectives and experiences. Movie theaters are also part of the history and culture of cinema. An experience spent in a particular movie theater can be identified with that place and become an icon that reminds us of that place. Some famous movie theaters may have historical significance and reflect the cultural background of an era. Even the architecture, decoration and atmosphere of movie theaters have an impact on the audience's experience [11].

Movie theaters, with their interior and exterior spaces, offer important clues to understand the relationship they establish with their audiences. The exterior design of the building determines whether it is an independent structure, a large cinema complex or a small alternative theater. With their architectural layout, movie theaters clearly reveal the "place" where they position their audiences. In addition, details such as the design of the door through which the audience is greeted at the entrance to the movie theater and what kind of experience they will encounter inside are also important. Each movie theater is associated with a unique audience. As a result, the interior and exterior spaces of movie theaters constantly remind the audience of their class identity [12].

This study aims to examine the cinema environment in Ankara, the cinema buildings of the period and the place of these buildings in the memory of the audience by analyzing the interviews in oral history studies in the cinema literature. In the light of the data conveyed by the participants, since the Büyük Sinema is the most memorable cinema venue in the memory of the audience, the study aims to determine the overlapping and diverging points of the architectural features of this building and the way it remains in the memory, and to investigate the effect of architecture on the audience's attitude and viewing experience through the selected building.

2. METHOD

In this study, an exploratory research method was adopted by using a secondary data collection approach. Secondary data can be defined as data other than primary data and previously collected for a different purpose. The oral history studies used as secondary data in the study constitute the data of two different studies. The first study is supported by TÜBİTAK and conducted by Hasan Akbulut (2018) with the code "115K269" and titled "Going to the Cinema as a Cultural and Social Practice: An Oral History Study on Audience Experiences in Turkey". The project is based on interviews conducted by the researchers with moviegoers in Ankara, Istanbul, Kocaeli and Antalya between 1960 and 1980. The oral history method

and interview technique used in the project were applied through the interview form developed by Akbulut, and as a result of the research, oral history interviews were conducted with 100 participants in 2015-2016. The fact that the research was conducted in four cities is due to the fact that these cities are related to the development of cinema, industrialization and modernization process in Turkey [13].

The second research used in the study is the PhD thesis titled "Audience and Space in Cinema: Changing Cinema Audience Culture in Turkey" written by Burak Medin (2017) and conducted in 2017 at Gazi University, Institute of Social Sciences, Department of Radio, Cinema and Television under the supervision of Prof. Dr. Zakir Avşar. In his study, Medin examined the changing culture of cinema attendance since the 1960s in the context of audience and cinema venues in the city of Ankara in Turkey. In his thesis, he conducted oral history interviews with a snowball sampling method and conducted oral history interviews with a total of 90 people with moviegoing experience in Ankara and asked 54 semi-structured questions to the sample group [14].

This study, in which studies conducted by different researchers were used as secondary data, basically consists of two stages. In addition to the oral history interviews used as secondary data, newspapers and magazines of the period were also utilized in the data collection phase. Aiming for an interdisciplinary approach, the study analyzes the interviews conducted by cinema researchers in Turkey who study the audience with oral history technique in the axis of city-space-memory. The research focuses on the way in which the architectural features of the Büyük Sinema remain in the audience's memory of the period through the cinemas of Ankara.

3. THE EARLY YEARS OF CINEMA IN THE OTTOMAN EMPIRE AND THE CINEMA ENVIRONMENT IN ANKARA

It can be found in Osmanoğlu's (1984) memoirs, *Babam Sultan Abdülhamit*, that the first movie screening in the Ottoman Empire was organized by a Frenchman named Bertrand at Yıldız Palace in late 1896 and early 1897, during the reign of Abdülhamit II.

"Bertrand was a mimic and juggler, and every year he would ask my father's permission to go to France, learn some new things and come back. He brought cinema to the palace. At that time, cinemas were not like they are now. The screen would be thoroughly wetted with big brushes and small pieces would be shown. These pieces were very dark, and the movie would be over in a minute. Nevertheless, we liked it because it was something new" [15].

Following the screenings at the Palace for the royal family, the first public cinema screening in the Ottoman Empire was held on December 12, 1896 at the Sponek Beer Hall. According to Çeliktemel-Thomen (2015), this cinematograph screening in Istanbul was the first private movie screening organized for "members of the press and a few invited guests". The public was introduced to the cinema after the protocol screening on December 12 [16]

Salle Sponek

Les curieuses séances que nous donne M. Henri Delavallée avec ses projections photographiques attirent chaque soir beaucoup de monde. Remarqué, jeudi dernier, la présence de S. E. le ministre de Grèce accompagné d'un *cavass* et du personnel de la légation.

Nous avons dit quelle intéressante nouveauté M. Delavallée nous présente, et nous recommandons encore à nos lecteurs d'aller assister à ce spectacle aussi amusant que peu coûteux.

Représentation tous les soirs, à 5 1/2, 6 1/2, 8 1/2 et 9 1/2 heures.

Prix d'entrée 5 piastres.

Sponek Hall:

Every evening, M. Henri Delavallée's photo projections attract many people with their intriguing sessions. Announcement,

Last Thursday, the Greek minister S.E. and his representatives were also present at the screening, guarded by the escort police. We have already told you, dear readers, that we recommend you to attend this inexpensive and entertaining thematic by M. Delavallée, who has presented a tremendous novelty.

Performances every evening at 17.30, 18.30, 20.30 and 21.30. The entrance fee is 5 piastres.

Figure 1. *Advertisement of the Stambol Newspaper dated December 25/26, 1896 [16]*

Ercüment Ekrem Talu (1943), who was among those who watched the first cinematograph show, gives the following information about the first movie screening in his article titled "The First Cinema and Gramophone in Istanbul" written years later. Talu, who was 8-9 years old at the time, states that in 1896 or 1897, he first met with the cinema in the large and chilling hall of a beer house, which had lost its

original function for that day, and that he looked at the 1-1.5 square meter screen in front of him, unable to make sense of it [17].

Figure 2. *Salih Erimez depicting the first movie screening for Perde ve Sahne magazine in memory of Ercüment Ekrem Talu [17]*

Pera, where these screenings were held, was a place where non-Muslims lived at the time, so it was not a place where Muslims preferred to go. Therefore, two months after the first cinematograph screening, M. Henri Delavelle started to organize film screenings at the *Fevziye Kıraathanesi* in Şehzadebaşı, where Muslims lived more. Describing the carnival-like streets of Şehzadebaşı on a Ramadan night in 1898, Sami Paşazade Sezai (1860-1936) described the juxtaposition of Karagöz and the cinematograph as "a strange contrast". It seems that after 1898, cinema became a part of Ramadan activities in Istanbul with the increase in the number of films coming from abroad. Sami Paşazade Sezai, who depicted this situation by creating a bit of a West vs. East contrast, evaluated cinema as a "marvel of art" brought to "ancient Asia" from the West, that is, from the "new world" [18].

As can be seen, cinema was initially a mobile practice in the Ottoman Empire as it was in the rest of the world. Itinerant filmmakers travel to different venues for screenings. Films were shown and watched in various public spaces such as coffee houses, beer houses, circuses, fairs, casinos, schools, theaters, association buildings, meeting and conference halls, and gardens, often in combination with other events, shows and entertainment. The first established movie theater in the capital was opened in Tepebaşı in January 1908 by Sigmund Weinberg, the Istanbul representative of the French company Pathé Frères. Following the Pathé Cinema, the number of movie theaters gradually increased from 1910 onwards. Until 1914, movie theaters in Istanbul were owned and operated by non-Muslim Ottomans, Levantines and foreigners. Cinema life is concentrated in the Galata-Pera region, where these segments of the population predominate. Beginning in the first months of 1914, one theater after another is opened by Turks, and cinema rapidly spreads to Muslim/Turkish areas of the city [19].

While the people of Istanbul first experienced the art of cinema in temporary venues and later in permanent movie theaters since the late 19th century, the first cinema screening attended by the residents of Ankara dates back to the 1920s. It is known that the first cinema in Ankara was located in the 1920s in the *Millet Bahçesi*. Although information about this building is unfortunately limited, it is stated that it was a two-story wooden building according to oral history narratives. There were lodges at the back of the lower floor and the upper floor (balcony) was reserved for ladies [20]. Ceyhun Atuf Kansu, one of the people who remembers the movies he saw at the movie theater in *Millet Bahçesi*, tells the following story: There used to be a *Millet Bahçesi* in the Ulus area where the business houses are now rising. At one end of this garden, where acacias shaded the station road, Ankara's first movie theater used to operate [21].

Although Ankara's first cinema building was the *Millet Bahçesi Sineması* in the national garden, oral history interviews indicate that film screenings in Ankara began at the *Hamid-i Sanayi Mektebi*. This can also be seen in the oral history interviews conducted by Burak Medin (2017) as part of his thesis. The

participant born in 1949, although not only in his own memory but through the memories of the older generation, stated that film screenings started in Ankara in the early 1920s before the cinema buildings appeared and that the first film screenings were held at the *Hamid-i Sanayi Mektebi* [14].

“Cinema screenings in Ankara were held during the years of the national struggle. Ankara residents get acquainted with cinema in 1919-1920s. In the early 1920s, movie screenings started even before the cinema buildings appeared. We know this from Fuat Bayramoğlu's memories. For example, there is now the Industrial Vocational High School building on Atatürk Boulevard near Ulus. It is the *Hamid- i Sanayi Mektebi*. It is said that the first movie screening was held here" [14].

3.1. Post-Republican Ankara Cinema Halls and the *Büyük Sinema*

When the historical process is analyzed to reveal the post-Republican Ankara-cinema relationship, the following picture emerges, Ankara was chosen as the capital city to reflect the ideology of the new regime established in 1923 and assumed a pioneering role in introducing the Western lifestyle and modern urban and architectural approach to the country. In pre-Republican Ankara, public spaces were limited to coffee houses, bedestens, hans and baths. However, after the declaration of the Turkish Republic, public spaces, which are the places where daily life will take place, begin to be reshaped with the efforts to become a nation-state and the modernization movements in the sociocultural field; the foundations of areas such as libraries, theaters, parks and restaurants are laid. In this period, the cinema space begins to become popular in the city and appears as a place of entertainment or socialization for both the republican elite and ordinary citizens. With the Republic, there is an increase in the number of movie theaters in Ankara. Between 1920 and 1950, Ankara's first movie theaters opened in and around Ulus, known as the old city [22].

There is a general similarity between oral history narratives and official history regarding the history of cinemas opened in and around Ulus in Ankara: The same participant in Medin's (2017) study, born in 1949, made a similar listing to the literature.

"If we are going to talk about an independent building where movies are shown, it is the *Kulüp Sineması* on Çankırı Street, 1926. This cinema was renamed *Halk Sineması* in the 1930s. Later it was named *Park Sineması.* This is the first independent cinema building in Ankara. (...) The second cinema is *Yeni Sinema.* It was established in 1928. It was next to the current Sümerbank building. No. 5. (...) Apart from that, *Süs Sineması* was established at the end of the 1930s next to the Child Protection Building on Anafartalar Street, which was also part of the *Sinema-İş Limited Şirketi*. In the early 1940s, a fourth cinema arrived. *Sümer Sineması* on the side facing Denizciler Street. (...) As can be seen, the emergence of cinemas has always been in the old city, that is, on the main Ankara side." (Male (ST11-1949) [14].

Until the 1950s, Ulus was the city center. As of the 50s, this centrality shifts towards Kızılay, which is called the ‘new city’. The ‘new city’, a developing residential area, rises to an important position on the map of the city within fifteen years starting from the 1940s. In these years, many cinemas begin to open in the ‘new city’. The first cinema in the ‘new city’ is the *Ulus Sineması*. The second cinema is the *Ankara Sineması* in 1943. Until the opening of the Arı Sineması, the biggest cinema in Ankara was the *Büyük Sinema* [22].

One of the participants in the oral history study, who was born in 1947, describes a similar historical process, except that the first cinema opened in the ‘new city’ area was not the *Ulus Sineması* in 1939, but the *Hale Sineması* in 1928. Perhaps the reason why the *Ulus Sineması* is considered the first in the literature is that the *Hale Sineması* also functioned as a casino.

"The first cinema in the new city is in 1928. Now there is the Military House building. There was a one-story block in the place of that building. The name of this place was *Hale Gazinosu and Sineması*. *Hale Gazinosu* brought cinema service to the people of the ‘new city’ as a saloon cinema. In 1939, the *Ulus Sineması* was established under the Soysal Building, which is now the Soysal Business Center. This cinema endured until approximately 1968. This was followed in 1942 by the *Ankara Sineması* in the ‘new

city'. Now there is the Balıkçıoğlu Han, at the beginning of Necatibey Street. It is right at the foot of the bridge. As the third cinema, the *Büyük Sinema* was opened in 1949 in the building where the *Büyük İşhanı* used to be, near the Zafer Square, where the Jewelers' Bazaar is now. Thus, the number of cinemas in Ankara started to increase". Kadın (ST35- 1947) [14].

The expansion of Ankara in the 1950s resulted in the emergence of satellite cities. This situation led to the appearance of neighborhood cinemas over time. Neighborhood cinemas created a different audience profile. Audience culture began to be shaped according to the neighborhood where the cinema was located. The same participant listed the neighborhood cinemas as follows. Local cinemas began to emerge in the satellite cities on the periphery of Ankara, such as *İnci* and *Cebeci Sineması* in Cebeci, *Renkli Sinema* in Bahçelievler, and *Alemdar* and *Seyran Sineması* in Yenimahalle [14].

There is an audience, interpreted as elite by people belonging to the middle- and lower-income groups, who prefer the cinemas in Ulus and its vicinity, which is defined as the old city, and the cinemas in the new city. In oral history narratives, going to the movies is not only a pastime but also a matter of culture and a ritual for that audience. For the audience outside these cinemas, especially those who prefer neighborhood cinemas, going to the cinema and watching movies is an important form of entertainment rather than a matter of culture [13].

Oral history narratives and written sources have showed that cinema screenings in Ankara started in the 1920s. It increased rapidly with the emergence of neighborhood cinemas in the 1950s. All these cinemas have taken place in the memory of the audience of the period with their different characteristics and have been the subject of oral history narratives. In the Tübitak project conducted by Hasan Akbulut (2018), as a result of interviews with 22 participants who went to the cinema and experienced cinema culture in Ankara between 1960-1980, the list of remembered cinemas in Ankara emerged as shown in the table and the most memorable cinema was the *Büyük Sinema* [13].

Table 1. *Remembered movie theaters in Ankara [13]*

Ankara					
Büyük Sinema	16	Kızılırmak Sineması	3	Arı Sineması	-
Gölbaşı Sineması	14	Aykut Sineması	2	Menekşe Sineması	-
Ulus Sineması	11	Karınca Sineması	2	Mine Sineması	-
Kavalıdere Sineması	9	Melek Sineması	1	Renkli Sinema	-
Akün Sineması	8	Koç Sineması	-	Batı Sineması	-
Ankara Sineması	7	Nergiz Sineması	-		-
Alemdar Sineması	4	Eti Sineması	-		
Dedeman Sineması	4	Bulvar Sineması	-		

Therefore, in the rest of this article, the place of the *Büyük Sinema* in the audience's memory and the effect of the space on the cinema experience will be investigated. Architect Abidin Mortaş explains the design of *Büyük Sinema* as follows:

"Straight and wide stairs on both sides lead to the balcony. At the top of the stairs is a large foyer. During movie breaks, the audience can smoke cigarettes there and see the paintings and objects displayed on the walls and in the showcases. All the details and decoration of the building were designed to be unaffected by any external influences and to be as original and distinctive as possible, using motifs and colors. A large ticket office hall opens into a more spacious waiting room. The ceiling of this area is high enough to cover two floors, so that the balcony connects with the waiting area, providing a spacious and special effect. Since the balcony is the most popular part of Ankara cinemas, this waiting room was given importance. The ceiling is decorated with papier-mache motifs and a large crystal chandelier. Customers come and sit here long before the sessions and make use of the buffet. In general, the interior effect of the big cinema is spacious and comfortable. Luxury has been avoided and an architecture that can be achieved with simple materials and normal workmanship has been created" [23].

Although the architect avoided luxury, *Büyük Sinema* was the most luxurious cinema in Ankara in the memory of the audiences of the period, and most of the time the reason for choosing this cinema was its large chandelier, wall decorations and the atmosphere created by the architecture. Gönül Hayat Eren, born in 1937, one of the audience members of the period who participated in Akbulut's (2018) study, recalled that she usually went to the *Büyük Sinema* because she felt as if she was entering a temple with its red carpets, maroon seats, and the chill in the room she felt when she entered.

"I used to go to the *Büyük Sinema*, because the *Büyük Sinema* had a special characteristic. Red carpets on the floor and well-kept comfortable maralken (maroken) armchairs, a pleasant coolness when you walked in and those romantic songs of the sixties were playing. Well, it gives you the feeling that you are entering a temple. It was such a beautiful place. Then it wasn't just a cinema, the *Büyük Sinema*. There were many events there, theater, concerts and so on. There was a pastry shop on top of the cinema." (Gönül Hayat Eren, 1937, Konya) [13].

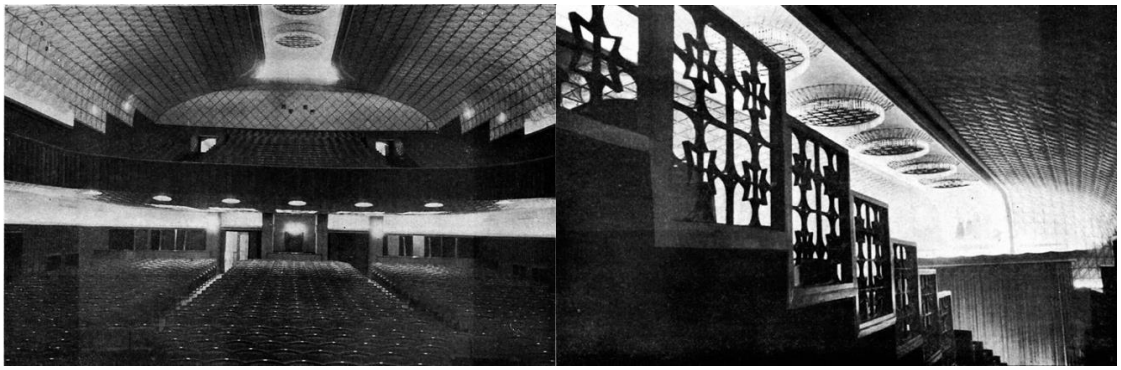

Figure 4. *Büyük Sinema interior details [23]*

The decoration of the *Büyük Sinema* by Turgut Zaim, with three women in folkloric costumes, is described as an admirable detail:

"*Büyük Sinema* was a very beautiful movie theater. There is a picture of three women in folkloric clothes on the upper part of the stage of the *Büyük Sinema*. I will never forget that for example. It is very symbolic. When you go to a place like this or when you go to a certain place, for example, a tree is like a friend, it became like a friend for me, like this. It was nice to see them. It was a modern image anyway. I wanted such things in my life. Such things were always very important in our lives." (Ayfer Çekiç, 1950, Eskişehir) [13].

Ayfer Çekiç, mentions that she feels these women as her friends. Another moviegoer of the period, İnci Erkol, born in 1953, remembers the women on the panel as three girls, three sisters, daughters of the moon god and muses at the same time.

"I think I liked the *Büyük Sinema* the most, they had pictures on the walls. The three things, the three girls in mythology, the three sisters, the daughters of the moon god and the muses (trying to remember the Muses of Greek mythology). There were pictures of them, I loved looking at them, on the walls. There were other pictures, well, flower patterns on the walls. That entrance used to excite me a lot. That's how you go to the movies, it's such a ceremonial thing; the doors click click click. Pulling those old seats back, sitting in them, watching them, my heart would beat until the movie started." (İnci Demirkol, 1953, Ankara) [13].

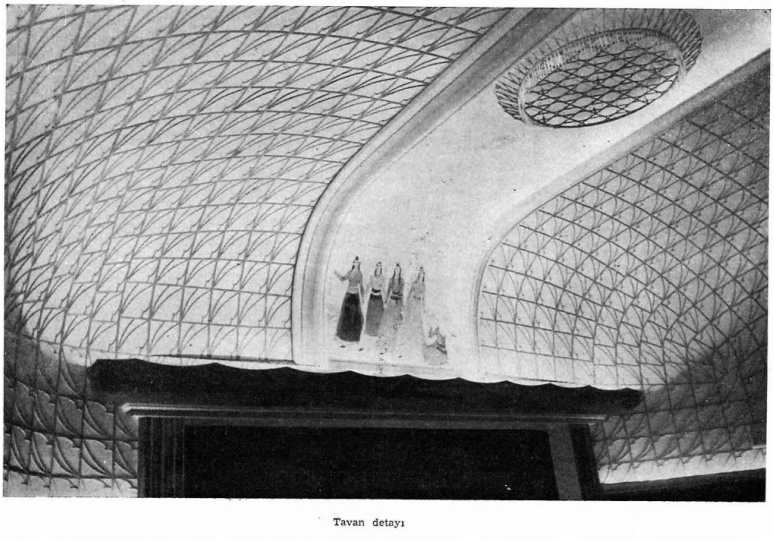

Figure 6. *Turgut Zaim's folkloric figures [23]*

Like Gönül Hayat Eren, Ulusay (2012) described the *Büyük Sinema* as a hall that makes you forget the ordinary and resembles it to a temple with its oval ceiling, comfortable seats, Turgut Zaim's folkloric figures and red curtains.

"It was a hall that made you forget the ordinariness of the outside when you entered it. This oldest cinema in Ankara made me feel like I was in a temple with its big hall, comfortable seats, oval ceiling, Turgut Zaim's folkloric figures on the walls, and the red curtain that opened and closed elegantly at the beginning, between the curtains and at the end of the movie" [24].

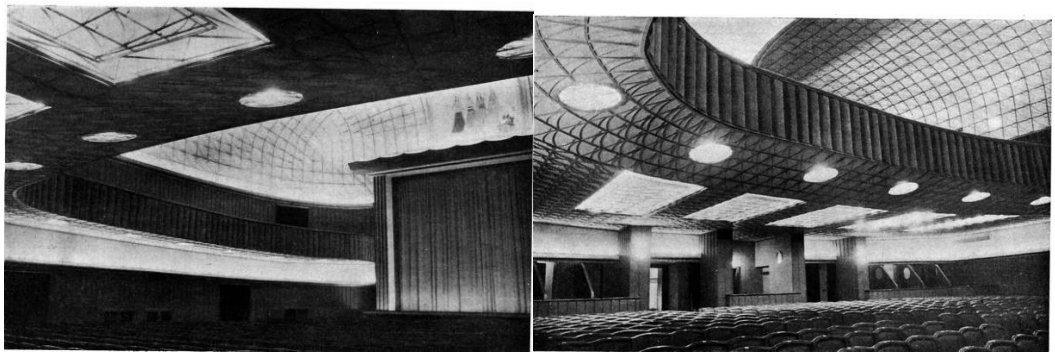

Figure 7. *Büyük Sinema Hall interior details [23]*

Another frequently remembered element related to the design of the cinema is the chandelier in the gallery area. Gönül Hayat Eren mentioned in her interviews that she loved this chandelier so much that she took a photograph of it and hung it in her house. In Karagözoğlu's (2004) memories, the elaborate dress of the staff, Turgut Zaim's folkloric figures, as well as the large chandelier on the ceiling were also included.

"This cinema was unlike any other cinema in Ankara at that time. First of all, the special dress of the staff was striking. A French flat cap, a cyan-colored tuxedo-style short jacket and trousers of the same color with black stripes on the sides. This was how the ticket takers at the door and the staff working inside served their customers. The lighting in the hall was from the ceiling. A large chandelier was installed. The other ceilings of the theater were embroidered. Folkloric paintings were painted on both sides of the stage. The theater was designed so that no matter where you sat, you could easily see the screen. There was a balcony and an entrance. And of course, the lodges. The lodges were for four people and very comfortable seats were provided" [25].

Figure 7. *Büyük Sinema ceiling detail and chandelier [23]*

It can be seen from the narratives in the oral history studies that the audience of the period preferred different forms of clothing in accordance with the structure. One of the participants, who sees going to the cinema as a ritual, mentions that the *Büyük Sinema* and *Sümer Sineması* have different rituals because the *Büyük Sinema* was a stylish place and one should had to be stylish there. From the narration of the audience of the period, it can be learned that it was normal to wear casual clothes when going to the neighborhood cinemas, but when going to the urban cinemas, especially to the *Büyük Sinema*, it was more formal due to both the social environment there and the architectural atmosphere.

"Movie theaters had their own ritual in the 1950s. For example, the *Büyük Sinema* was built as an elegant movie theater. The people were also elegant for this reason. In order for a ritual to take place, there must be different and suitable venues according to the way the ritual is performed. Cinemas should be thought of as such a place. Now the *Sümer Sineması* and the *Büyük Sinema* of the same period have different rituals. (...) At the *Sümer Sineması*, you won't find a red carpet to walk on. However, *Ulus Sineması* boasted a navy-blue carpet, while *Büyük Sinema* featured a red carpet. This makes a difference in the carpet; it makes a difference in the clothes. The usher at the *Büyük Sinema* was in uniform, but in other second and third-class cinemas the usher wore trousers and a shirt. These uniforms are tailored with thought. For example, a cyan hat, cyan/navy blue pants, patent leather shoes. The audience is different. If the ladies have a fur coat, other ladies want to come to the soiree with their fur coat." (Male (ST5) [14].

Cinemas were important tools of the modernization project of the Turkish Republic. Women in the Republican elite became visible in social life at the balls given at the Ankara Palace, but the visibility of women in the ordinary public was realized through cinemas. Since men and women could watch movies side by side in movie theaters, this togetherness and women's visibility in the public sphere was accepted by a section of society.

Ramazan Çetin, one of the cinema workers of the period, stated that men and women could watch movies together in the *Büyük Sinema*, but this was not possible in Maltepe or other neighborhood cinemas.

"Men and women used to watch it mixed, but in some theaters, for example *Büyük Sinema*. There was *Gölbaşı Sineması* in Maltepe, this place had a lodge. *Derya Sineması*, for example. When people came as a family, husband and wife, they preferred the lodges. Of course, the prices of the lodges were a little different. The lodges were twice as expensive." [26]

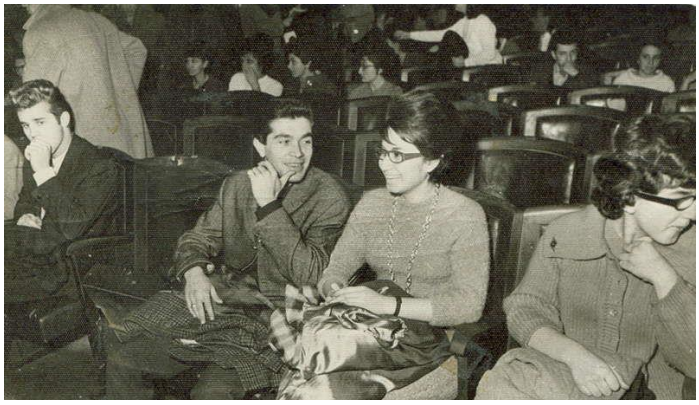

Figure 8. *Audience at the Büyük Sinema [27].*

5. CONCLUSION

During the modernization and westernization process initiated with Tanzimat and further accelerated with the Republic, Turkey underwent significant changes across historical, cultural, and economic dimensions, leading to the direct alteration and transformation of lifestyles. These processes of change are observable in daily life practices, urban architecture, production and consumption patterns, and ultimately in cultural practices. In the 19th century, cinema emerged in Ottoman territory as a continuation of the aforementioned westernization endeavors.

Based on oral history interviews conducted by researchers on audience perceptions and viewing experiences, it becomes apparent that cinema serves not only as a form of entertainment but also as a creator of alternative public spaces. Movie theaters should be regarded as venues with diverse missions catering to various target audiences. These spaces possess the capacity to foster awareness and provide an alternative relationship between space and time, beyond mere leisure activities. When considered in conjunction with the concept of public space, cinema offers a multi-faceted and multi-sourced experience by bringing together narratives from different geographies and perspectives. Moreover, movie theaters are also recognized as social spaces. Within these environments, individuals gather away from their homes and workplaces, forging connections with acquaintances and strangers alike, as well as meeting with relatives and friends. Movie theaters serve as hubs for sharing cultural and social experiences, facilitating communal interaction. Nevertheless, the stylistic distinctions among movie theaters lead to variations in the viewing experience, influencing participants' choices of venues.

In this study, which focuses on the architecture of the *Büyük Sinema*, information gathered from the audiences of the period reveals that attending screenings at the *Büyük Sinema* had a ritualistic significance. Unlike other movie theaters of the period, watching a movie at the *Büyük Sinema* required a special form of behavior. Likened to a sanctuary, the *Büyük Sinema,* with its burgundy seats, majestic chandelier, Turgut Zaim's folkloric depictions, and iconic red carpet, was etched in the memory of the audience and each element contributed to the overall viewing experience. Moreover, as one of the venues where men and women could comfortably attend screenings together, *Büyük Sinema* emerged as a republican space that symbolized urban sophistication.

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New Structuring in the Historic Environment: Investigation of Diyarbakır Yenikapı Street

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Abstract

Historical textures are the representatives of cultural heritage that convey the way of life, economic and sociocultural structure of the people living in the past and the technology of that period. Many reasons such as urbanization problems, migration, war, natural disasters, epidemics, economic problems, new construction tendency, change in education and lack of awareness make it difficult to preserve the historical texture and transfer it to the future. The addition or reconstruction of new buildings within the historic fabric emerges as a design problem in terms of providing historical and cultural continuity. Diyarbakır, a historical city in southeastern Turkey, has been home to many civilizations from past to present. The Suriçi District of Diyarbakır, which has preserved its historical and physical texture for many years, underwent a major change after the armed conflict in 2015. Instead of the demolished buildings in the district, after a very rapid design process, the traditional street texture was destroyed and new buildings were designed that evoke the design styles of traditional houses. The aim of this study is to examine the new buildings designed as a result of the reconstruction of Yenikapı Street in Diyarbakır Suriçi District after 2016 in line with new building design approaches in the historical environment and to evaluate them within the criteria of new construction in the historical environment. In this context, in the research process; after conducting a literature research, the historical environment, new building in the historical environment and new building design approaches in the historical environment were examined, the situation of Yenikapı Street before and after the demolition was analyzed, and determinations were made in line with the criteria for new construction in the historical environment.

1. INTRODUCTION

Historical textures, which exist in some parts of cities, are the representatives of cultural heritage that tell us about the way of life of people living in the past, the economic and sociocultural structure, and the technology of that period. Historical textures are successful areas in reflecting the harmony formed between these differences to the whole of the space, from a single building to the city scale, although they contain many different features of the periods in which they have been created since the past [1]. Historical textures bring great value to the places where they are located in terms of urban identity, and transfer the values referenced from the past to future generations as an accumulation [2].

Factors such as the change of users, ignorance of individuals, the failure of administrators to raise awareness and educate the society on conservation, and the failure of the state to produce adequate policies on conservation are the factors that cause conservation problems of historical environments [3].

After the Second World War, many cities in Europe became devastated and ruined. The gaps opened after the removal of the ruins in the cities, the protection of the urban fabric was opened to discussion and the search for solutions in environmental protection gained importance. The protection of the historic environment at the scale of a single building was first mentioned in the Athens Charter in 1931, and it was stated that new construction in the historic environment should be implemented in a way that respects the identity of the settlement. The 1933 Treaty of Athens mentions the aesthetic style of the past in new

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buildings and the prevention of backward copying. In the Venice Charter, the concept of monument is addressed within the urban settlement and the preservation of the existing traditional environment is emphasized. The use of war-torn and destroyed cities as a tool for the formation of national consciousness made the protection of historical environments necessary. In 1946, UNESCO was established under the United Nations, which was active in the universal importance of the protection of cultural heritage. In 1975, at the European Year of Architectural Heritage congress, in the 1987 Washington Charter and in all subsequent conservation charters and declarations, "for new building design in the historic environment, in integrated conservation, the scale, plot size and building material of new buildings should be compatible with the environment" [4],[5].

Historical textures are the representatives of cultural heritage that convey the way of life, economic and sociocultural structure of the people living in the past and the technology of that period. Many reasons such as urbanization problems, migration, war, natural disasters, epidemics, economic problems, new construction tendency, change in education and lack of awareness make it difficult to preserve the historical texture and transfer it to the future. The addition or reconstruction of new buildings within the historic fabric from past to present emerges as a design problem in terms of providing historical and cultural continuity. Today, one of the main problems in restoration practices in the historical environment is how to adapt the new to the existing texture/structure and how to establish the relationship between old and new [6].

New building designs in the historic environment are generally categorized under three main categories: imitation/repetition, interpretation and contrasting [5]. The question of whether contemporary additions and new buildings to be built in the historic fabric should be designed as replicas of their period, whether they should be designed as harmonious or similar buildings that reflect the qualities of the existing historic fabric, or whether they should be designed as contemporary buildings that reflect the architectural features of their age is one of the critical points that require designers to decide [7]. New buildings designed in historic environments should be in harmony with the surrounding historic fabric in terms of architectural style, scale, material selection and details to ensure authenticity and integrity. At this point, when designing a new building in the historic environment, the designer should interpret the physical and social characteristics, material and plan features, which constitute the identity of the historic fabric, by establishing a connection with the conservation values of the area [5],[8],[9],[10].

With the urban transformations that emerged at the beginning of the 20th century in the world, similar and contemporary approach interventions were introduced in the historical environment. After the 2nd World War, heavily damaged cities were built with physical repairs in the form of creating a new urban texture in the same or completely demolished old texture. In this period, the old and new urban areas were frequently brought to the agenda with new applications with modern techniques and imitation of the old. While Gustavo Giovannoni, Camillo Boito, Aldo Rossi, Christopher Alexander contributed to the preservation of the historic environment; architects such as Mies Van Der Rohe Le Corbusier opposed the imitation of the old and supported modern additions and construction in the historic environment [11],[12].

After the 1950s, the demolition and reconstruction of cities faced economic, social and cultural problems. After 1960, rehabilitation practices were preferred in cities and the awareness for the protection of cultural assets as human heritage began to emerge. In Turkey, after the 1990s, urban renewal has come to the forefront as a model that tries to ensure the sustainability of the texture in historical cities [13], but original applications were tried to be realized after 2000.

There are many legal regulations and universal decisions regarding the design of new buildings in the historic environment. Although the designs are limited by the Conservation Zoning Plans, this issue is directly related to the architect's skills, knowledge, attitude and awareness towards the historical environment. In this context, although the new building in the historical environment has been adopted within the original approach to the continuation of the traditional identity, it has led to an increase in imitation and contrasting structures that are far from tradition, do not carry references to the historical environment, as seen in the Urban Conservation Area Rehabilitation and Renewal works carried out in

settlements such as Fener-Balat, Side, Manavgat, Beyoğlu, Talas, Tarsus, Ankara, Antalya Kaleiçi, Eskişehir Odunpazarı [14],[15],[16].

Diyarbakır is a settlement in the Southeastern Anatolia Region of Turkey with a rich architectural heritage inherited by various cultures and urban settlements and buildings that are the concrete expressions of these cultures [17]. The city, which stands out with its historical texture and traditional architecture, is surrounded by walls dating back to the Roman and Byzantine periods. In this area, called Suriçi (Walled City), traditional houses, inns, mosques and churches are located in a narrow and organic street texture within the boundaries of the city walls. Diyarbakır's historical and traditional fabric reflects the city's rich history, cultural heritage, lifestyle, identity and character.

The internal conflicts in Diyarbakır Suriçi in 2015-2016 significantly affected the historical fabric and cultural heritage of the region. Interventions during and after the clashes damaged the physical structure and historical heritage of Suriçi. Many historical buildings in Suriçi were destroyed or severely damaged. These include historic houses, mosques, churches, inns and baths. Many people have been forced to migrate from Suriçi due to the conflict. This has led to the deterioration of the cultural and social structure of the region. The process of reconstruction and restoration of Suriçi has become more complex in the aftermath of the conflicts. Large gaps, squares and buildings were constructed without considering social, cultural and climatic data.

The aim of this study is to examine the new buildings designed as a result of the reconstruction of Yenikapı Street in Diyarbakır Suriçi District after 2016 in line with the new building design approaches in the historical environment and to evaluate them within the criteria of new construction in the historical environment. In this context, in the research process; after conducting a literature research, historical environment, new building in historical environment and new building design approaches in historical environment were examined, the situation of Yenikapı Street before and after demolition was analyzed, and analyzes were made in line with the criteria for new construction in the historical environment.

1.1. New Building Design Approaches in the Historic Environment

The gaps in historical environments bearing traces of traditional texture are filled by constructing new buildings in line with certain design criteria. While these gaps are sometimes gaps opened in the urban fabric as a result of the destruction of historical buildings for certain reasons, sometimes it is possible to have gaps that can be utilized with a building as a result of some changes, even if there was no building in the past [18]. The way in which new designs should be created in the historic environment has been a subject of debate since the past. In the light of these discussions, design criteria have been established with certain approaches. These are;

- Imitation/Repetition Approach
- Interpretation Approach
- Contrasting Approach [5],[4],[18].

The imitation/repetition approach is an approach that copies the historic environment in which the new building is located, imitating the traditional features and materials of historic buildings. This approach adopts the act of dressing modern buildings with traditional façades and is defined as facadism. Such approaches can generally be defined as conservative and are seen in social circles that adhere to their traditions [19],[20].

The contrasting approach is the most creative of the design criteria. However, it is the most difficult approach to design and to get society to accept it. Those who believe that the contrast between the old and the new will create an environment with a depth that no other period has been able to realize over time have argued that the integration of modern buildings into historical environments will be successful [21].

It is stated that imitation/repetition and contrasting approaches are extreme proposals for new buildings to be constructed in the historic environment and that a third approach, interpretation, is easier to produce and implement. This approach focuses on understanding the characteristics of the existing historic fabric

and adapting the new building to it. Architects need a detailed urban analysis and design process to construct new buildings that are compatible with the historic environment using contemporary technology and materials. When this process is not carried out with care, the result can be mediocre, eclectic products that detract from the quality of the environment [22].

1.1.1. Imitation/Repetition Approach

In this approach, it is aimed to design the same of the buildings in the historical texture damaged due to various reasons, considering the building elements such as mass, material and façade, without making any changes. It is based on repeating the traditional architectural elements in the urban fabric and reflecting them exactly the same. While the façade of the new building is designed, it is seen that it is used without trying to differentiate while interpreting the forms and styles of the buildings in the historical texture without interpreting the architectural elements of its age. The façade of the new building is constructed as a decor. The reason for this is that there is no integrity between the interior of the building designed by imitating the architectural elements such as color, material and façade elements of historical buildings and the façade of the mass created [23]. From this point of view, it is understood that the imitated element is only the mass and façade, and that the interior of the new building can be designed with different functions than the original.

There are also those who disagree with this design approach. According to Bektaş, "A work that is a true product of its time can only be accompanied by a new creation that is truly contemporary. To replicate a building that was born under the conditions of a century ago, from the way of life of that day, from the construction methods of that day, with the principles valid that day, shows at least a hundred years of backwardness. It shows a failure to comprehend the past hundred years" [24].

1.1.2. Interpretation Approach

It is an approach that establishes integrity by adapting to historical textures by interpreting the architectural elements, forms, layouts and principles that are mostly dominant in the existing historical texture as a result of analysis and reflecting them to new designs with the materials and technology of its age. New buildings designed with the interpretation of historical buildings are the approach that enables to combine old buildings in the historical texture with modern design understanding. A modern appearance emerges with the new building designed with inspiration from historical buildings [8].

New buildings designed with the interpretation approach are designed to resemble the façade and mass character, occupancy-void ratios, dominant or distinctive formal features of historic buildings. Based on the interpreted architectural elements, it is possible to repeat a certain rhythm, refer to the historical building, and create a visual and semantic relationship. This approach must necessarily include a contemporary interpretation. With the interpretation approach, it is aimed to reflect the features of the historical building to the design with contemporary interpretations without imitating the architectural elements of the historical building or some of these elements [25]. The buildings designed with this approach should be designed in the way required by their own era, otherwise it can easily turn into imitation.

1.1.3. Contrasting Approach

In this approach, while designing new buildings in the historic environment, it is aimed to consciously contrast the technology, materials and textures of the era. The aim is to make the traditional buildings in the historic environment more prominent and visible through this contrast. Although the building is different from the architectural attitude of the historical environment, it allows the historical texture to be perceived by using large glass surfaces and reflective surfaces such as aluminum, as opposed to ignoring its surroundings. On the other hand, according to Brolin (1980), "Acting under the influence of two visually diametrically opposed tendencies does not always guarantee visual interest. The result can lead to completely independent, unrelated results that harm each other. The important thing is for the observer to distinguish between contrast-contrast and ignoring-ignoring." [7].

2. METHOD

Yenikapı Street, located in Diyarbakır Suriçi District and redesigned after the demolitions in 2015, constitutes the material of this study (Figure 1). First of all, a detailed literature search was conducted and the historical environment, new building in the historical environment and new building design approaches in the historical environment were explained. While conducting the literature research, magazines, books, articles, theses, yandex, google earth and on-site photographs were utilized and supported with visuals. In this context, selected examples from the world and Turkey are analyzed in terms of design approaches, and an evaluation is made by considering what kind of approach has been taken in Yenikapı Street and how successful it has been in this process.

Figure 1. *Yenikapı Street (Google Earth) [26]*

3. RESEARCH FINDINGS

3.1. Example Designs for Imitation/Repetition Approach

One of the best examples of the Imitation/Repetition approach at the urban scale is the imitation of the historical urban fabric of Warsaw, Poland, in order to revitalize it. During the 2nd World War, Warsaw's urban fabric was severely damaged and the damaged buildings were imitated and reconstructed in the same way. The main purpose here is to ensure the continuity of the urban fabric that has taken place in people's memories in the past and to unite the old and the new on a common ground by integrating the old buildings with the modern city (Table 1).

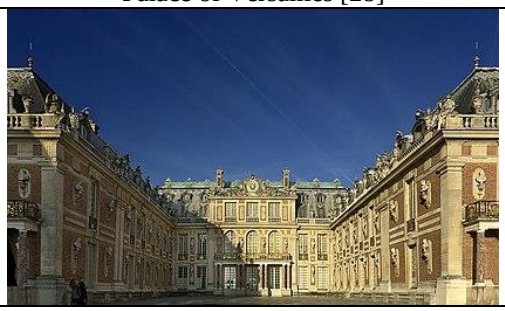
Table 1. *Visuals of Warsaw - Old Town, Poland [27]*

Urban fabric destroyed during World War 2	Renewed urban fabric
	

There are examples where some of the copies built as a result of imitation/repetition of existing buildings in the historical texture do not show the features required by the era and lose their originality. Designed

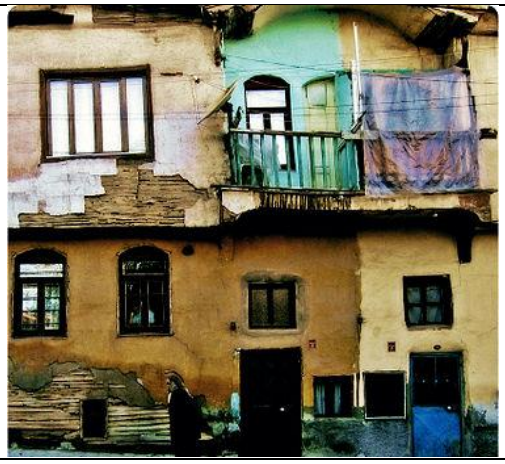
by Ricardo Bofill, the Abraxas mass housing buildings were built in Paris in the 1980s. Inspired by the Palace of Versailles, a baroque space was created by transforming classical forms rooted in French culture. A Greek amphitheater in the center of the building descends gradually like a staircase from the first floor on the plaza side to the stage, with a very high triumphal arch at the entrance. The façades of these residences are divided by extravagant columnar masses of prefabricated sections and glass. Although reinforced concrete, one of the construction techniques of its time, is used in this building, it is inconsistent in terms of façade design and many architectural elements (Table 2).

Table 2. *Images of sample buildings in France*

Palace of Versailles [28]	Les Espaces d'Abraxas [29]
	

The majority of people think that the best approach in a historic fabric is not to incorporate new applications into the historic environment and to revitalize the entire deteriorated fabric. In our country, one of the best examples of imitation/repetition practices in order to ensure the historical and cultural continuity of the historical urban fabric is Eskişehir Odunpazarı houses. The historical Odunpazarı houses in the Odunpazarı district, which constitutes the first settlement of Eskişehir, are on the UNESCO world heritage list. Within the scope of a cultural center project by Eskişehir Metropolitan Municipality in an area overlooking Odunpazarı Square and visible from the road, the houses were built in reinforced concrete frame style with the original architecture and in this context, it was first opened as Eskişehir Museum of Contemporary Glass Arts on December 1, 2007 (Table 3).

Table 3. *Visuals of Eskişehir Odunpazarı [30]*

Historical Odunpazarı Traditional House	New Odunpazarı Houses imitating the historical Odunpazarı traditional house.
	

3.2. Example Designs for Interpretation Approach

An example of new buildings built with an interpretation approach in the historic environment is the additional educational building designed for the Faculty of Health Sciences of Semmelweis University in Budapest. The Faculty of Health Sciences organized a design competition in 2016 for the expansion of an educational building dating back to the early 1900s. Studio Fragment won the competition to create seminar rooms, demonstration rooms and 2 large conference rooms. The neighborhood where the university is located often includes important cultural and educational institutions built in the 19th and

early 20th century. According to the main design concept, a new massing was designed to create a complex consistent with the existing building. Accordingly, the addition creates a completed inner courtyard and connects the two buildings at all levels. The building follows the strong characteristic rhythm of the façades of the surrounding buildings and matches the color of the existing building (Table 4).

Table 4. *Hungary, Budapest [31]*

Semmelweis University - New Education Building for the Faculty of Health Sciences (2022)	
	

Located on İstiklal Street, next to the Odakule Passage, the museum building was designed in 1907 as the Bodvi Apartment. In the 1950s, the building was purchased by Turkey İş Bank, and the ground and first floors of the building, which was previously a store, were structurally transformed to function as a bank branch until the 2010s. The upper floors, which consisted of a series of rooms attached to the façade and were residential, were left in their original state and used as offices. In 2023, the building was completed as the İşbank Painting and Sculpture Museum with some additions. While the façade, which deteriorated in the 1950s, was reconstructed according to its original form, the rest of the materials and ornaments were preserved as they were (Table 5).

Table 5. *Istanbul, İş Bank Painting and Sculpture Museum [32]*

Turkey İş Bank (1950)	İş Bank Painting and Sculpture Museum(2023)
	

Designed by Sedad Hakkı Eldem, one of the most important architects of the Republican era, in 1962 and built between 1962 and 1964, SSK Zeyrek Facilities has a very important place in the history of Turkish architecture. Sedad Hakkı Eldem was awarded the Aga Khan Architecture Award in 1986 for this design. Built in the historical texture and reflecting the modern architectural elements of its period, this building was designed with an approach that is far from imitation by adapting to its surroundings. It adapted to the topography by interpreting the mass movements of the traditional houses in its surroundings and harmonized with its surroundings without overpowering the historical buildings (Table 6).

Table 6. *Istanbul, SSK Zeyrek Facilities [33]*

Social Insurance Institution Zeyrek Facilities, Sedad Hakkı Eldem (1964)	
	

3.3. Example Designs for the Contrasting Approach

An example of this approach is the modernization of the Main Building of the Wybrzeże Theater in Gdańsk, completed in 2023 by WAPA Warsztat Architektury Pracownia Autorska. The building was constructed in the early 1960s on the ruins of a pre-war building and is located within the historical fabric of the city. It is one of the best examples of how a modern building can contrast and blend into the historic environment, with a simple and transparent massing designed with contemporary materials such as glass and steel. It is successful in reflecting the architectural characteristics of its period with the construction technique and materials used, and thanks to its glass surfaces, it allows the perception of the surrounding historical buildings. At the same time, the height of the building is respectful to the surrounding historical buildings, creating a contrast and harmony with the historical texture (Table 7).

Table 7. *Poland, Gdansk Wybrzeże Theater [34]*

Gdansk Wybrzeże Theater / WAPA Warsztat Architektury Pracownia Autorska (2023)	
	

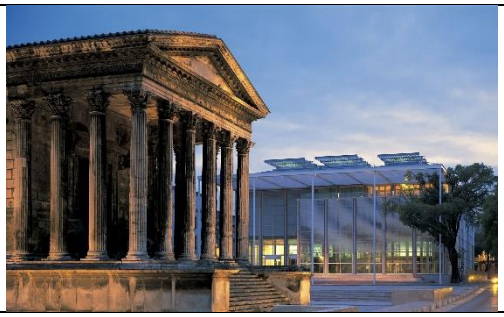
Built in 2023 by Christ & Gantenbein in Paris, Vaugirard Social Housing is an example of a building designed to contrast the historic environment. This residential design is the product of a contemporary idea of urban revitalization. Elegantly complementing the traditional residential area, the project is presented as a series of volumes characterized by setbacks and carved recesses that form a frame in a sculpted volume with a moving long façade. A metal façade wraps the exterior and the transparent lacquered steel references Parisian roofs while maintaining a raw touch. Adopting elements of the city's traditional roofing, familiar elements are reinterpreted to come together in the historical and cultural context of the city. The building is designed with contemporary materials to contrast with its surroundings, while the height of its massing allows its characteristic features to emerge without overwhelming the surrounding historic buildings (Table 8).

Table 8. *Paris, France [35]*

Vaugirard Social Housing / Christ & Gantenbein (2023)	
	

Built in 1993 by Foster and Partners in the historic French city of Nimes, the Carré d'Art Media Library is another example of this approach. The site is located right next to the Maison Carrée, a perfectly preserved Roman temple. Contemporary materials such as glass and steel were used in the design of the building to contrast with the historic fabric. The mass, façade and height of this building, which has the architectural characteristics of its era, respect the historical texture and make the surrounding historical buildings more perceptible with its transparent surface. Carré d'Art has successfully interpreted the architectural elements of the historic Roman temple Maison Carrée, and in doing so, it has utilized the technology of its time, while at the same time creating a contrast with the historical texture. The greatest importance of this design is to relate the new to the old, but at the same time to create a building that fully represents its era (Table 9).

Table 9. *Nimes, France [36]*

Carré d'Art / Foster and Partners (1993)	
	

3.4. History of Diyarbakır Suriçi District - Yenikapı Street

Diyarbakır Suriçi District was declared a Grade 1 Urban Conservation Area by the Diyarbakır Regional Board for the Protection of Cultural and Natural Heritage in 1988 and a Conservation Plan was prepared in 1990. In 2008, the Conservation Zoning Plan was suspended for revision and an Urban Renewal (Slum Transformation) Project was signed between TOKİ and the Governorship of Diyarbakır in the southwest of the Suriçi District. At the same time, as the entire Suriçi District was under renovation for the KAIP, work in the south-west of the district was postponed until after the approval of the Conservation Zoning Plan. In 2012, the new Conservation Plan was approved [37]. In 2014, it was decided to conduct a Street Sanitization Study for Yenikapı Street. In 2015, the city walls and the Hevsel Gardens to the south of the historic city were included in the World Heritage List. In 2014, it was decided to carry out the street rehabilitation work, which aimed to organize the street for pedestrian access and preserve the width of the street, except for the obligatory vehicle entrances. The demolition of unlicensed multi-storey buildings in the area and the construction of no more than two storey buildings in accordance with traditional Diyarbakır residential architecture were also included in the scope of this work. However, due to the conflicts in 2015, the work was halted and reconstruction work started in 2016 (Table 10).

Table 10. *Historical processes in the Suriçi District of Diyarbakır (Table prepared by the author)*

1988	1990	2008	2008	2012	2014	2015	2015	2016
Suriçi Region was declared a Grade 1 Urban Conservation Area.	A Conservation Plan for the Suriçi was prepared.	The Conservation Development Plan (KAİP) was suspended for revision.	Urban Renewal (Slum Transformation) Project was signed in the south west area of Suriçi.	The new Conservation Development Plan (KAİP) was approved.	Street Sanitization Work was initiated in Yenikapı.	The city walls and the Hevsel Gardens to the south of the historic city were included in the World Heritage List.	As a result of the conflicts and migration, the traditional street texture was lost in the eastern part of the city where Yenikapı Street is located.	The Conservation Development Plan (KAİP) was revised. Construction work has begun in the area.

Diyarbakır's historical urban area, the Suriçi, preserved its traditional texture to a great extent until the 1940s. However, since the 1950s, the physical structure of the city, which started to expand outside the city walls, began to change. With this process, migration and population growth led to unplanned urbanization, and the Suriçi District began to lose its original character in social and architectural terms [38]. In the 1950s, a commercial axis was created on Gazi Street and İnönü Street, which were characterized as the main axis in the city, with the demolition of traditional residences. In 1990, with the migration from the village to the city due to the terrorist incidents, the existing parcels in the Suriçi District were divided within themselves and the population density increased [39]. Due to this increase in density and with the widespread use of reinforced concrete construction techniques throughout the country, users in Suriçi started to make some additions to traditional stone houses. Reinforced concrete additions, which were perceived as a sign of wealth by the users of the period, caused the deterioration of the historical texture and as a result, places without identity began to form (Figure 2).

Figure2. *Buildings on Yenikapı Street (2014) [40]*

Yenikapı Street, which starts from Yeni Kapı, one of the four main entrances on the city walls, and extends to Balıkçılarbaşı PTT Branch, has preserved its street texture for many years, even though it has undergone physical changes over time (Figure 3) [41]. Starting from the entrance of the street and heading in the east direction, many historical buildings such as Balıkçılarbaşı PTT Branch, Şeyh Mutahhar Mosque, Four-legged Minaret, Mar Petyun Chaldean Church, Surp Giregos Church, Pasha Bath and Süleyman Nazif Primary School are encountered (Figure 3; Table 12).

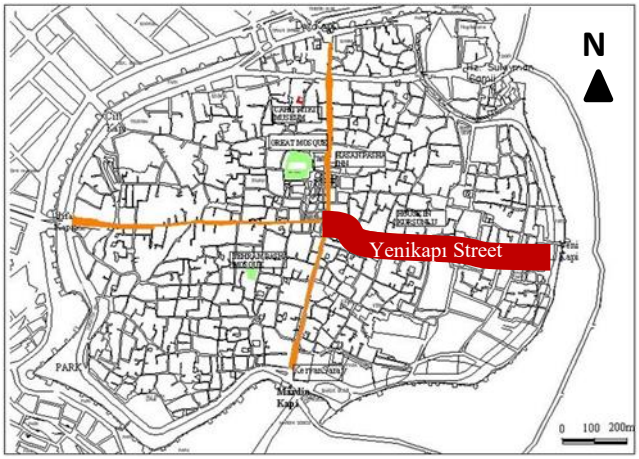
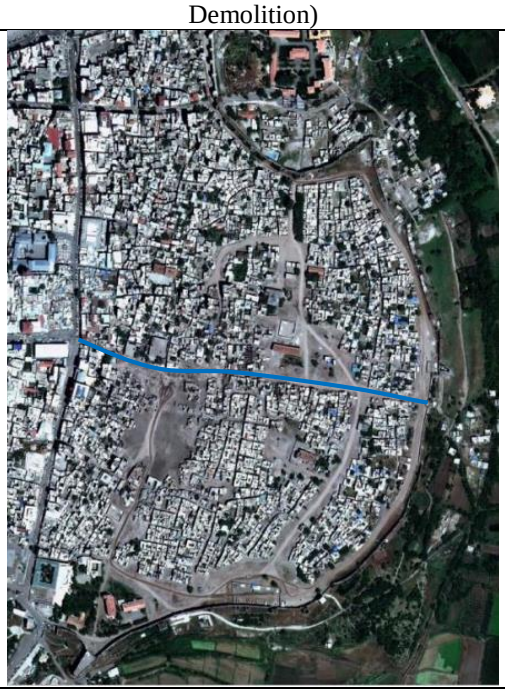


Figure 3. *Location of Yenikapı Street in the Suriçi District [41]*

3.4. Analysis of the Design of Yenikapi Street

After the demolition in 2015, many buildings on Yenikapı Street were damaged or completely destroyed. The street texture that existed before the demolition has been disrupted and turned into a linear road that has lost its original form. The texture that once formed an ecological space with its narrow and dead-end streets and courtyard walls has completely disappeared (Table 11).

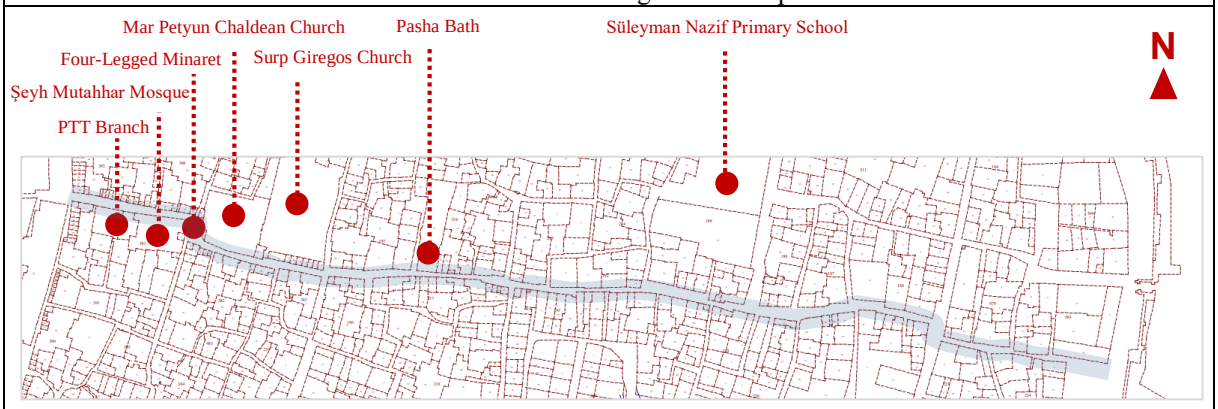
Table 11. *Changes in Suriçi District, Diyarbakır [42]*

Aerial Photograph of Suriçi District (2015, Before Demolition)	Aerial Photograph of Suriçi District (2016, After Demolition)
	
Yenikapı Street Old Street Texture (2015)	Yenikapı Street (Today)
	

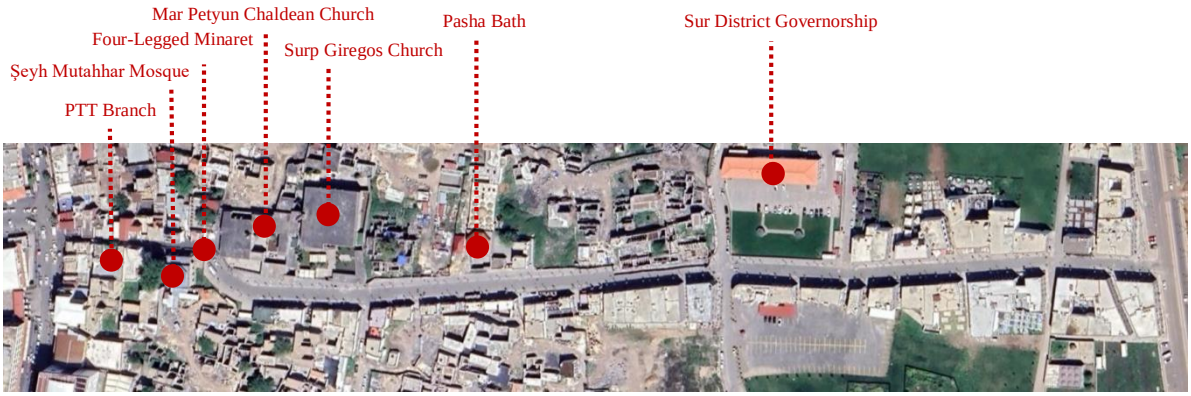
In the street analysis conducted within the scope of this study, some historical buildings on Yenikapı Street were marked and certain focal points were created to analyze the change (Table 12).

Table 12. *Yenikapı Street (Google Earth)*

Historical Buildings on Yenikapı Street



Yenikapı Street (2012)



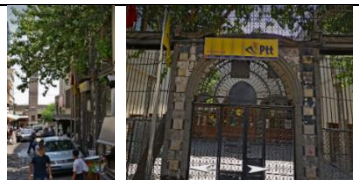
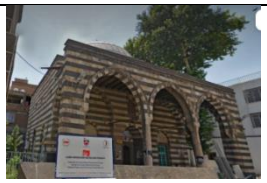
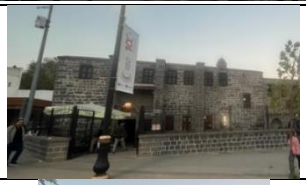
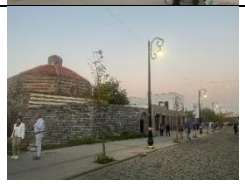
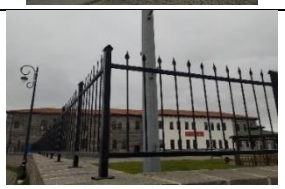
Yenikapı Street (Today) [43]

Digital resources were utilized to reveal the extent of the change. As a result of the research, when the year 2014 was selected from "Yandex Map", images of Yenikapı Street before the demolition in 2015 were accessed. Yenikapı Street is accessed from Gazi Street, the oldest artery of the city. When entering Yenikapı Street from Gazi Street, the Balıkçılarbaşı PTT Branch, the first post office building of the Late Ottoman and Early Republican Period, the Şeyh Mutahhar Mosque and the Four-Legged Minaret are located in the south of the street. The texture and color of the original material of all three of these monumental buildings have been contaminated due to natural causes. To the north of the PTT building are reinforced concrete commercial and residential buildings built in the 1950s. On the street following the buildings, a traditional house has been converted into a cafeteria. To the north of the Four-Legged Minaret are the Mar Petyun Chaldean Church and Surp Giragos Church. In 2014, due to the commercial spaces around the churches, the churches cannot be perceived as they are integrated with the narrow streets. Moving eastwards along the street, one can see the historical Pasha Hammam to the north of the street and the plastered and painted façade of Süleyman Nazif Primary School, which was originally a Latin Church.

In 2024, the change of Yenikapı Street was photographed by considering the angles of the 2014 images. When the buildings are analyzed in order; the building belonging to Balıkçılarbaşı PTT Branch and the buildings that merge with the Gazi Street axis to the north, Şeyh Mutahhar Mosque and Four-Legged Minaret were not affected by the demolition in 2015. It was observed that the façades of the historical buildings were cleaned to reveal the color and texture of the original material, while the plaster and paint of the reinforced concrete buildings were renewed. Mar Petyun Chaldean Church and Surp Giragos Church were restored. With the removal of the commercial spaces around these religious buildings, the churches have become perceptible from the street. The historical Pasha Bath was restored after the damages it had suffered. The original stone material was used for the wall, which was completed by cleaning the plaster. Before 2015, the building belonged to Süleyman Nazif Primary School, but after the

restoration works, the plasters were removed, the stone masonry was exposed, and the building was reused as Sur District Governor's Office (Table 13).

Table 13. *Yenikapı Street*

Structure	2014 (Before Demolition) [40]	Experienced Change	Today
PTT Branch		Balıkçılarbaşı PTT Branch has regained its historical texture by renewing its plaster and paint with cleaning works.	
Reinforced Concrete Structures at Entrance		It was not affected by the demolition in 2015 and has survived to the present day in its current condition. The plaster and paint of the façade of the buildings have been renewed.	
Four-Legged Minaret		The Four-Legged Minaret was cleaned to reveal the color and texture of its original material.	
Şeyh Mutahhar Mosque		Şeyh Mutahhar Mosque was cleaned the colour and texture of the original material is revealed.	
Southeast of the Four-Legged Minaret		The existing buildings were demolished and replaced by a large square.	
Mar Petyun Chaldean Church		The Mar Petyun Chaldean Church was restored and the surrounding buildings were demolished, making it visible from the street.	
Surp Giragos Church		With the cleaning and restoration works carried out after the demolition, it is seen that the entrance of the church has become perceptible from the outside.	
Pasha Bath		When the bath was restored as a result of the damages, the plasters were cleaned and the wall was completed with the original stone material.	
Sur District Governorship		Before 2015, the building belonged to Süleyman Nazif Primary School. After the restoration works, the plaster was removed, the stone masonry was exposed and the building was re-functioned as Sur District Governorship.	

View of Yenikapi Street		By increasing the distances between the newly designed buildings, the street texture was destroyed and transformed into a wider avenue.	

Before the 2015 demolition, Yenikapı Street was transformed into a smaller scale commercial axis following Gazi Street. During this period, the ground floors were used for commercial purposes and the upper floors were used for residential purposes, while on the new street designed after the demolition, two-storey buildings used only for commercial purposes were built. Before 2014, the function of this street, which was a traditional bazaar with shops developing within the original texture, was changed and turned into cafeterias, restaurants, clothing stores and chain markets (Figure 4).

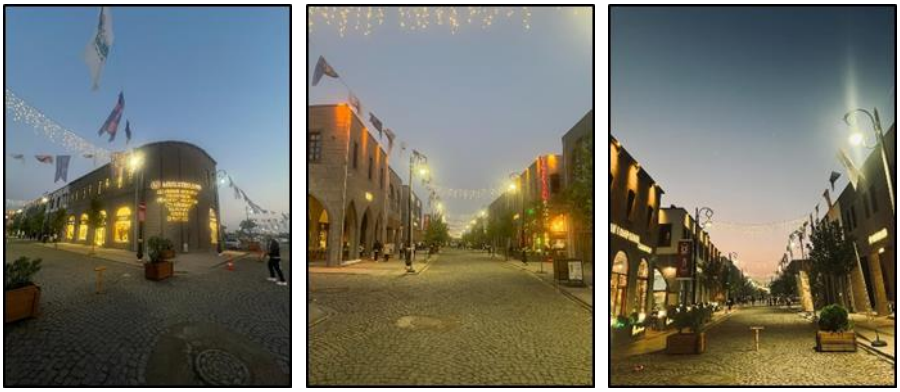
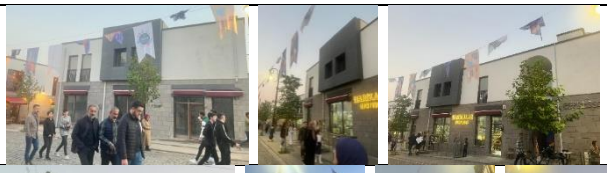
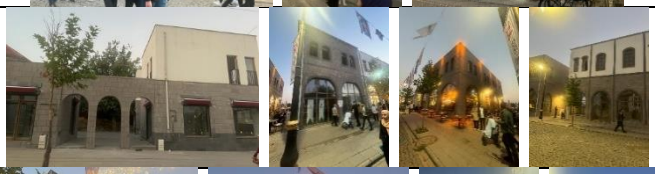
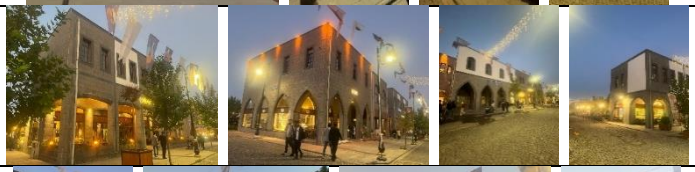
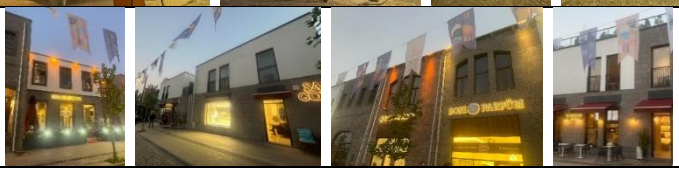
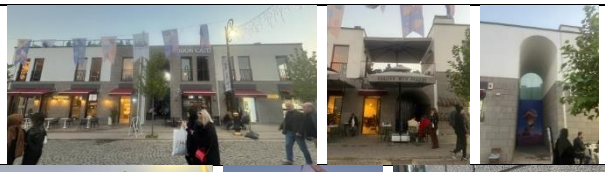
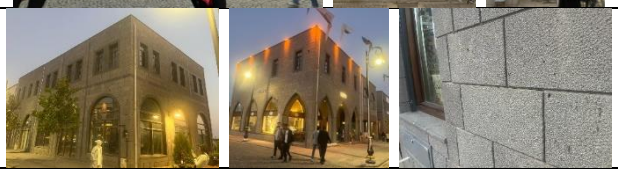


Figure 4. *New Buildings on Yenikapı Street (Today)*

In the design of the completely changed streets and new buildings in the historical area where Yenikapı Street is located, the design was influenced by the use of bay windows, arches, iwan, skylights, cabalt and basalt materials found in traditional Diyarbakır houses (Table 14).

Table 14. *New Design of Yenikapı Street*

Traditional Structure Effect	**Existing Structure Images**
Cumba Effect	
Arch Effect	
Eyvan Effect	
Window at the top Effect	

Kabaltı Effect	
Basalt Material Effect	

With the changes made in this context, traditional houses;

- The upper floor was influenced by cumbas on the street façade,
- Arched transitions inspired by the arched openings created on the façades,
- Inspired by the pointed and flat arched windows, windows of larger sizes were made,
- The courtyard façade uses storey windows with flat lintels like the window at the top in the upper part of the high walls,
- Influenced by the eyvans, which are used as semi-open spaces, semi-open seating areas are also built in cafes and restaurants,
- The high arched passageways between the new buildings are similar to the kabaltıs commonly used in the old street fabric,
- Although the new buildings are built with reinforced concrete construction technique, basalt stone cladding material is used on the façades to remind the traditional structure,
- It is observed that the heights of all buildings are generally built at the same level and terminated with a thin parapet molding (Table 14).

4. CONCLUSION

The walls of Diyarbakır and the Hevsel Gardens to the south of the historic city were included on the World Heritage List in 2015. The Suriçi District, which harbors the historical texture of the walled city, was designated as a buffer zone. In late 2015, armed clashes in the city caused the destruction of many buildings. The city, which preserved its original texture until the 1950s, preserved its traditional texture despite the migration and change of users in the 1980s and 1990s. However, the recent destruction has increased the destruction of the texture.

The Suriçi District of Diyarbakır is unique in that it is surrounded by walls that preserve the integrity of its historical texture, has a continuous settlement area, and is home to different religions, languages and cultures. The Yenikapı, also known as the Water Gate, which is one of the four gates connecting the city walls to the outside, is located in the east, has a flattened arch and a single entrance and has been used throughout history as it connects the city to the Tigris River. As a result of the surveys conducted in the Suriçi District, it was observed that Yenikapı Street is located as a commercial axis extending from the Four-Legged Minaret to the Yenikapı (Dicle-Irmak-Shat Gate) (Figure 5).

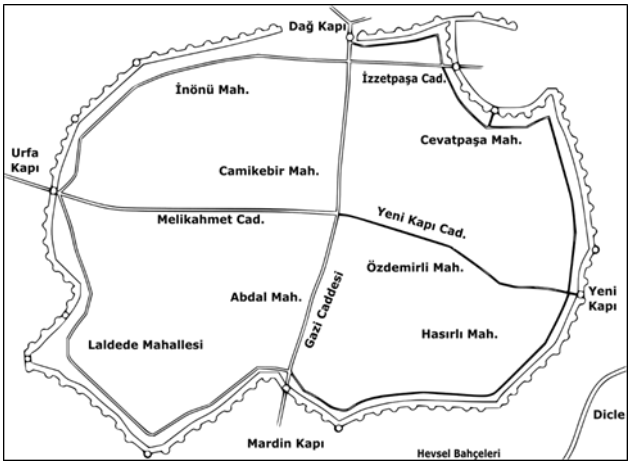


Figure 5. *Gates Located in the Suriçi District [44]*

After 2015, major changes have occurred in the east of the city due to the demolitions. As a result of these changes, it is seen that the design of Yenikapı Street was made without considering the relationships between the street and building layouts that make up the original urban fabric. Before 2015, from the intersection of two main arteries, Melikahmet Street and Gazi Street, towards Yenikapı Street, the street, which had an organic texture in accordance with the topography with its traditional houses and monumental buildings, has nowadays taken the appearance of a widened ordinary street. It is seen that the new design does not reflect the character of the historical texture and the spirit of the place, does not contain original features in a void, and has an identity-less appearance.

Before the demolition in 2015, while the protrusions on the street façade of the buildings and the elevation differences between the heights of the buildings provided shaded areas on the street, the shaded areas on the street disappeared due to the fact that the newly designed buildings were on the same elevation and the distance between them increased. With the widening of the street and the increase in the distances between the buildings, gaps have been created that are not suitable for the hot and dry summer climate of the city (Table 15).

Table 15. *Changes in Yenikapı Street*

Old street texture of Yenikapı Street (2014) [32]	Yenikapı Street as it is today
	

Cities, which are becoming more and more standardized with the development of technology, create differences between other cities with their historical textures. In this context, historic cities provide a link between past, present and future generations [45]. New buildings in the historic environment can encourage contemporary architectural expression while respecting the historic environment by using modern and traditional construction techniques and materials to help preserve the character and texture of the environment. Poorly organized renovation projects in the historic environment can lead to loss of identity, disruption of social continuity and loss of urban memory. New construction in the historic environment is practiced through imitation/repetition, interpretation and contrasting approaches to new construction in the historic fabric. However, sometimes these approaches can be used together.

Figure 6. *Cahit Sıtkı Tarancı House, which can be given as an example of traditional Diyarbakır Houses [46]*

The commercial spaces on Yenikapı Street were designed to mimic elements of Diyarbakır's traditional building culture. Arched and flat windows, iwan openings, bay windows and cabriolets, which are the most common architectural elements seen on the façades of buildings in the historical texture, are used in the newly designed buildings by changing their shapes and proportions. While the elevation differences in traditional buildings due to climatic effects give an aesthetic quality to the city silhouette, in the new buildings all upper elevations are equal and uniform (Figure 7).

Figure 7. *Façade designs of new buildings on Yenikapı Street*

When the designs of the commercial spaces on Yenikapı Street are examined, basalt stone, which is a traditional material, is used as a coating on the reinforced concrete surface in the façade design. It is seen that an attempt is made to imitate the old in terms of material, but problems arise due to improper use of stone sizes and joints (Figure 8a).

In the imitation approach, building elements such as mass, material and façade of the buildings in the historical texture are designed in the same way without any changes. If we look at the new buildings designed today, it is seen that the elements used in the façades of traditional buildings are not the same as the old ones and a complex façade design is created by changing only the proportions, dimensions, locations and functions of the openings (Figure 8b, 8c). On the other hand, it is a common practice in the historical fabric to restore the damaged buildings and give them new functions in addition to new construction. When the monumental buildings on the street are examined, it is a positive approach that the restoration and renovation works have opened up the perimeter of the buildings so that they can be perceived from the outside (Figure 8d).

(a) **(b)** **(c)** **(d)**

Figure 8. *Sample images Yenikapı Street*

The Last Word…

Historic environments carry different styles and forms, social relations, historical, aesthetic and symbolic values as witnesses of the past [47]. The buildings in these areas define the space design, construction materials and techniques, and architectural character of the region [48],[49],[50],[51]. It argues that conservation works carried out in the historical environment should have integrity and include sustainable practices, and that problem identification and analysis should be carried out in conservation-related research [52].

The relationship between the new design and the traditional fabric in the historic environment varies according to the historical, architectural and technical characteristics of the original fabric and the textural, structural and contextual qualities of the area [53]. By respecting the historic fabric and heritage of the area, the development aims to preserve the architectural style and fabric of the surrounding area, while encouraging the preservation and reuse of existing historic buildings. In cases where new building construction is mandatory, designs should be made in a way that respects the historical character and identity of traditional architecture and cares about the protection of cultural heritage [54].

The design of new buildings in historic environments is considered as a design criterion within the contemporary conservation concept in order to preserve the historical and cultural continuity of the physical environment and transfer it to the future. In this type of construction approach, preservation of the historical heritage is essential.

When constructing new buildings in historic environments, it is important to preserve and restore historic buildings, to harmonize with the traditional texture in terms of scale, height and style, to use traditional materials, and to preserve or recreate open and green areas.

New buildings in the historic environment should be integrated aesthetically, functionally and structurally with the original texture. This integration should be achieved through traditional or contemporary techniques and materials, rather than repetition and imitation of the architectural style of the past [4],[47]. “Analogies” created within the traditional approach, which do not have any specific value, should be avoided as they can lead to misleading conclusions [55].

International treaties and conventions emphasize that interventions in the historic fabric should reflect the urban and architectural characteristics of each period. For this reason, imitations are generally opposed, except in cases of major disasters or special situations created in society. In the design of new buildings in the historic fabric, the acceptance of the historic environment as a design data, the preservation of the texture and character of the historic environment, and the transfer of the traces of the past to future generations are the criteria that should be taken into consideration in interventions. In this direction, if the buildings built on Yenikapı Street are analyzed in terms of new building design criteria in the historical environment;

- New buildings are not designed in accordance with the silhouette and settlement texture of the historical texture,
- The mass features of the buildings in terms of height and width are not integrated with the historical texture,
- The façade features of new buildings damage the authenticity of the historic fabric in which they are located,
- The new street design is not designed in a way that is respectful and appropriate to the spirit of the place,
- The new buildings examined in terms of their periodic legibility lack creative interpretation and elements that emphasize the contemporary,
- New buildings do not contribute to the cultural continuity of the historical texture in terms of spatial integrity, [56]
- That new buildings cannot be part of the urban architecture,

- The city has a uniform appearance apart from its unique architecture,
- Loss of social and demographic structure,
- In the design of the commercial buildings on the street, it is seen that there is an imitation within the reconstruction and that the attempt to imitate the old is not successful.

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Architectural Evaluation of People's House Building as a Modernization Project in The Early Republic Period and The Example of Elazığ People's House[1]

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Abstract

The Republic, declared on October 29, 1923, brought many innovations in the fields of architecture and urbanization. Atatürk's vision played a crucial role in the development and implementation of these innovations. In the Early Republic Period, buildings in the style known in many sources as Late Ottoman Early Republic Architecture or First National Architecture, along with buildings in the international style that Atatürk especially wanted to be implemented with the arrival of foreign architects and artists to our country, were constructed together. Especially in the capital Ankara, buildings constructed in both the First National and international styles were located side by side or very close to each other. The modernization movements in cities that started with Ankara in the early Republic also manifested themselves in other Anatolian provinces. With the establishment of the Republic, the idea of establishing People's Houses as an educational institution emerged to disseminate the ideology of Turkish revolutions to the public. The establishment of People's Houses in 1932 and the gradual opening of People's Houses in every province are evidence of the role of People's Houses in the modernization of cities and the education of the people. The Elâzığ People's House, which is discussed in the article, was opened on February 19, 1934, for these purposes. The building, which served as a People's House from 1934 to 1952, was used as a Girls' Primary School from 1952 to 1972, and as a High School and Education Institute from 1972 to 1982. Since 1983, it has continued to be used as a teachers' house. The Elâzığ People's House Building, built in the international style in the Early Republic Period, will be examined in terms of its plan, construction technique, and facade features, and will be compared with People's House buildings in other cities in terms of these features.

1. INTRODUCTION

In 1923, with the establishment of the Republic, a comprehensive modernization project encompassing all aspects of the country emerged. Through cultural, political, and economic decisions, the new regime was largely defined [1]. Under this modernization project, new spaces began to emerge with formations brought by the Republic ideology. Consequently, there was a period of intense construction activity. Examples include People's Houses (People's House buildings), schools, post offices, agricultural institutions, and government buildings [1].

The modernization efforts during the Early Republican Period represented a more profound and comprehensive structure compared to the modernization attempts in the final years of the Ottoman Empire [2]. State authority served as the driving force behind this period's modernization, aiming to achieve a contemporary societal structure comparable to modern nation-states [2].

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The economic, political, and cultural reforms necessitated by modernization were swiftly implemented by the state under the principle of for the people.

Under the modernization project of the newly established state aimed at creating a new and modern society, cultural and educational institutions were seen as significant tools. Among these, the most effective were the People's Houses (Halkevleri) opened in many cities during the early years of the Republic [3]. People's Houses were utilized as a means to introduce the state ideology to the public during that period."

The subject of this study is the Elazığ People's House (People's House), construction of which was decided in 1933 and opened on February 23, 1934. There is currently no detailed study in the literature that extensively examines the urban and architectural characteristics of the Elazığ People's House.

With the declaration of the Republic, efforts for modernization included the establishment of People's Houses in every province. When the idea of constructing a People's House in Elazığ arose, unlike some other People's House buildings, an existing structure was not utilized. Instead, a new building was planned at a significant and focal point in the city. During the planning of the building, urban relationships, and architectural features desired for People's Houses were taken into consideration. In terms of these attributes, the Elazığ People's House became an important educational and cultural structure of its time.

Following the closure of People's Houses, the Elazığ People's House was repurposed for different functions, leading to changes in its floor plan over time. Efforts are currently underway to restore it to its original form.

This study examines the Elazığ People's House in terms of its architectural and ideological features that made it significant during its significant during its construction period.

2. METHOD

In this study, first, the establishment process of People's Houses, which is one of the modernization projects carried out by the state, and their contributions to society are described, and their architectural features are discussed. It is mentioned which institution undertook this task in society before the People's Houses and whether this institution was sufficient for introducing the new Republic ideology. For this purpose, studies conducted on People's Houses in the literature have been examined and briefly summarized. Then, the Elâzığ People's House, which is important in terms of carrying the architectural characteristics of the period it was built in and these characteristics to the present day, was examined within the People's Houses. The architecture of Elâzığ People's House is described in light of the data obtained from the survey, restitution, and restoration reports prepared for the building.

3. PEOPLE'S HOUSES

With the establishment of the Republic of Turkey, a new modernity project was launched in line with enlightenment ideals and Westernization movements. This project particularly gave rise to new building types in urban areas. One of the most tangible evidences of the desire to spread the modernity project across the country was the establishment of "People's Houses" (Halkevleri) in many regions [1].

During this period, Atatürk aimed to create a contemporary society. It was observed that the rapid changes implemented did not reach the public at the same pace, highlighting a need for mass education to bridge this gap [4]. Halkevleri were established with this purpose in mind.

Prior to Halkevleri, this role was undertaken by Turkish Hearths (Türk Ocakları). Turkish Hearths emerged as vibrant proponents of the "Turkism" movement, revitalizing after the decline of the "Ottomanism" trend in the late Ottoman period. Founded in 1911, Turkish Hearths aimed to "work for the cultural unity of Turks and their advancement in civilization" [1].

In the Ottoman Empire, the bonds based on the Islamic community (ummah) were dissolved by the ideology of nationalism, and further fragmented with the Balkan Wars, giving rise to the Turkism movement [5]. Turkism aimed to differentiate and define Turks from other ethnic groups within the Ottoman Empire. Turkish Hearths (Türk Ocakları) were established as central organizations that unified and governed these ideas. Throughout the Republic period, Turkish Hearths continued their activities, but gradually moved towards an increasingly nationalist organization, which drew criticism from the Republican regime due to its potential threat to Atatürk's reforms [5]. Consequently, Turkish Hearths voluntarily disbanded on January 10, 1931, and their assets were transferred to the Republican People's Party (CHP) [6].

After the closure of Turkish Hearths (Türk Ocakları), efforts swiftly began to establish a new organization by examining both domestic conditions and global practices [4]. As a result of these efforts, People's Houses (Halkevleri) were officially founded on February 19, 1932. The former Turkish Hearths building became the headquarters of the new People's Houses, and the opening ceremony was held there [4].
The first 14 People's Houses were initially established across Turkey. These were located in Ankara, Afyon, Samsun, Eskişehir, Diyarbakır, İzmir, Konya, Denizli, Van, Aydın, Çanakkale, Bursa, Istanbul, and Adana [3].

There are activity areas in community centers that everyone can participate in. These areas are divided into 9 groups: Language, History and Literature, Art, Performance, Sports, Social Aid, Public Preparatory Centers and Courses, Bookstore and Publishing, Village Husbandry, Museum and Exhibition [1].
Starting with 14 branches in 1932, the number of People's Houses grew to 48 by the following year. By 1940, their number had increased significantly to 379, with most located in cities and towns across provinces [3]. Additionally, in rural areas where People's Houses were less accessible, small community centers known as "halk odaları" (people's rooms) were established starting from 1939 to serve the same purpose [7].

4. PEOPLE'S HOUSE BUILDINGS

The People's House buildings, which were part of the intensive urban development activities in the early years of the Republic, were provided by the Republican People's Party [3]. These buildings were intended to represent the new ideology while also reflecting Turkish culture. Despite the influence of foreign architects who were prominent in the rapid urbanization of the 1930s in our country, the design and construction of these buildings were largely carried out by local architects and engineers [5]. People's House projects were obtained through several methods (Table 1).

Table 1. *Preparation Methods of People's House Building Projects (Created by authors using sources)*

Project Preparation Format	Ministry	Competition	Consultant Architectural Office	Special Offices or Governorships Upon Order	
People's Houses	Kars (1938)	Zonguldak (1933)	Eminönü (1936)	Düzce (1933)	Yalova (1938)
	Çorlu (1939)	Samsun (1936)	Konya (1940)	Elazığ (1933)	Mardin (1938)
	Isparta (1939)	Bursa (1937)	Balıkesir (1944)	Antalya (1933)	Şehremini (1938)
	Çankırı (1939)	Kadıköy (1938)	Bartın (1945)	Diyarbakır (1934)	Manisa (1938)
	Kırklareli (1939)	Sivas (1938)	Nallıhan (1946)	Eskişehir (1936)	Kars (1938)
	Ağrı (1937)	Çanakkale (1943)		Gerede (1936)	Afyon (1939)
	Çoruh (1937)			Karamürsel (1936)	Gebze (1939)
	Muğla (1937)			Kayseri (1937)	Adana (1944)
	Erzincan (1937)			İzmit (1937)	İzmir (1948)
				Mersin (1937)	

Many People's Houses were opened in existing buildings. Following the closure of Turkish Hearths, their properties were transferred to People's Houses, and some of the old buildings in cities were also used as People's Houses. For example, in Ankara, the former Turkish Hearths building designed by Architect Arif Hikmet Koyunoğlu was used as a People's House (Figure 1). Besides Ankara People's House, the People's Houses in Izmir and Isparta initially used former Turkish Hearths buildings; however, new People's House buildings were constructed over time when the existing buildings became insufficient.

*On May 29, 1935, the party name changed to the Republican People's Party.

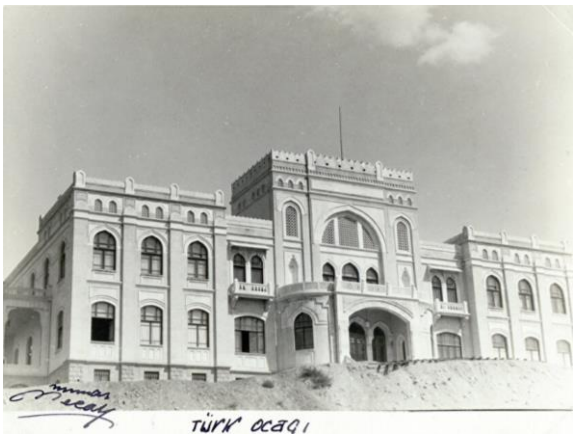


Figure 1. *Ankara Türk Ocağı Building, Arif Hikmet Koyunoğlu [8]*

In 1940, the Republican People's Party established the Consulting Architecture Office to expedite the construction of People's House Buildings in towns and villages under a structured program. Master Architect Ahmet Sabri Oran was appointed for this task. Oran was tasked with preparing standard project designs for each city and town [1] (Figure 2).

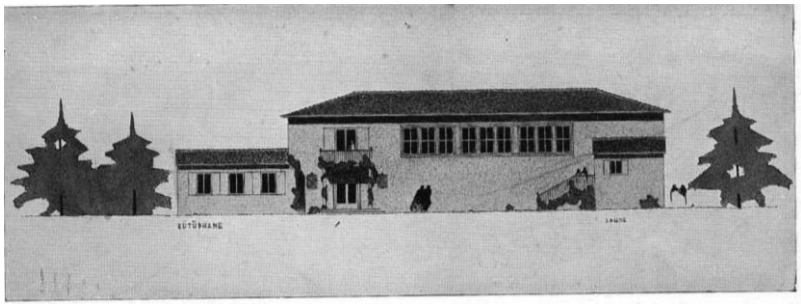


Figure 2. *The facade of a small-scale People's House project [9]*

The Turkish Hearth buildings, upon which the People's Houses were founded, exhibit characteristic features of the First National Architecture Movement with symmetrical floor plans, facade arrangements, circular or pointed arches, domes, wide roof eaves, monumental appearances, and decorations [10]. However, criticism of this architectural style began in Turkey in the 1930s, leading to the influence of modern architectural principles [11]. During the same period, state buildings started to prefer an international style alongside national socialism.

People's House structures embodied the ideology of the era through their architecture. According to the architects of the time, these buildings were seen as symbols of authority, hence state buildings were expected to be plain yet authoritative [5].

For People's House buildings, new materials, technologies, and construction systems of the time were employed [10], applying rationalist and functionalist approaches that were influential in the 1930s architecture [11]. This was because the characteristics of modern architecture were considered to align with the innovative qualities of the Republic. Therefore, it can be said that People's House buildings, constructed considering the functional and stylistic features of modern architecture, served as visual representatives of the Republic through their architectural form and functions.

People's Houses were constructed with consideration for modern architecture, yet some of them also exhibit local influences. For instance, in Bursa People's House (1932), a traditional inner courtyard typical of Bursa architecture was incorporated. However, in many People's House buildings, there is an

approach aligned with modernist design principles, which stands independently without direct relation to traditional buildings [1].

4.1 Location and Urban Relationships

The new nation-state established Republic Squares representing its power in urban areas. The minimum building program in the modern cities of the new Republic includes the Gazi Primary School, Government House, and People's House Building. People's House buildings were located near Republic Squares, the new urban centers, or on main thoroughfares, becoming defining structures of the city center [5].

Due to their affiliation with the party, People's House buildings were perceived as part of the state structure. These buildings represented not only the educational needs of the public but also the presence and power of the new regime through their locations, urban relationships, architectural forms, and materials [5].

With the building program of 1940, proximity to residential areas became important in site selection. Instead of being squeezed among other official buildings, these structures were set back from the street and often surrounded by extensive gardens as planned in standard projects. The idea was to create distinguishable structures that could be perceived as schools, but these projects were not fully implemented, and the commitment to their locations around Republic Squares remained [5].
In People's Houses, symbols and signs of the authority were always present, including the statue of Gazi, inscriptions, the six-arrowed party flag, and the Turkish flag (Figure 3).

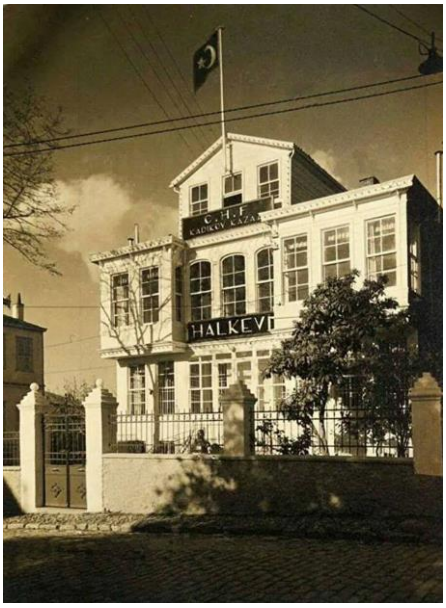


Figure 3. *The Turkish flag at the Kadıköy People's House building [12]*

4.2 Plan

The functional mass approach based on international style influenced the plans of People's House buildings. These buildings typically consist of a hall, administrative section, library, and classrooms. These units are arranged in various combinations to create different plan types. In his study, Durukan identified the plan types of People's House buildings as L, I, T, and U [1].

People's House plans are generally designed according to the topography, utilizing slopes to gain an additional floor. Architects have adapted to the terrain to maximize space utilization [1].

Unlike single masses, People's Houses feature fragmented masses strategically placed according to their functions.

In the plans of People's Houses, there is a departure from the symmetry characteristic of the First National Architecture Movement. Instead, the design of the buildings reflects an asymmetrical planning approach influenced by the international style [1]. While this general trend is observed in most buildings, there are exceptions such as the Isparta People's House, which features a symmetrical plan. However, even in such cases, the structure is composed of different-sized cubic units assembled together, resembling the plan formation of structures built in the international style [10].

Towards the later period of People's Houses, examples like the Mersin People's House (1946) exhibit a symmetric plan layout where the building is conceived as a single mass [10].

4.3 Technology and Materials

People's House buildings typically used reinforced concrete for floor slabs and structural walls and columns, while bricks were employed for non-load-bearing infill walls. After the 1940s, there was a noticeable shift towards using stone and constructing pitched roofs, reflecting a move towards nationalistic architectural elements [1].

The choice of materials was often influenced by the size of the People's House and economic considerations. Floors were predominantly adorned with mosaic, marble, or small geometrically shaped tiles (Figure 4). Stairs were commonly covered in marble. In terms of design, elaborate and ornate staircases were replaced by simpler, more modest ones on a smaller scale (Figure 5) [1].

Figure 4. *The flooring of the Kırklareli People's House Building [1]*
Figure 5. *The staircase detail of the Kadıköy People's House [1]*

4.4 Facade

People's House buildings incorporated fundamental elements of modern architecture in their facade designs. These included expansive terraces, cantilevers, metal railings, and flat roofs, which were common features across these structures [1] (Figure 6).

Figure 6. *Kadıköy People's House Buildings [12]*

In the facades, small square and rectangular windows were commonly used, along with circular windows which are elements of modern architecture. Circular windows were particularly seen in multi-purpose halls and stage lighting [1].

Basement floors were typically clad in stone, while upper floors were finished with edelputz plaster [1].

While structures generally shared common features on their facades, some People's House buildings exhibited variations. For instance, Adana People's House (1939) featured a monumental entrance with colonnades (Figure 7). It can be said that during these periods, architecture was turning towards nationalism [1]. The high-arched entrance facade and the use of large local stones in Mersin People's House, built in 1946, reference the Second National Architecture Period and distinguish it from other People's House buildings (Figure 8) [1].

Figure 7. *The colonnaded entrance of Adana People's House [13]*
Figure 8. *The arched entrance of Mersin People's House [14]*

When examining People's House buildings, it can be considered that they are symbolic structures of the new Republic, hence great importance was given to their facades. To achieve the desired appearance of the facade, the plans were arranged according to the massing [1].

5. ELAZIĞ PEOPLE'S HOUSE

After the decision taken in 1931 to establish 14 Halkevleri nationwide, the completed preparations led to the successive opening of these Halkevleri. The Elazığ People's House was opened on February 23, 1934 [7], and following its inauguration, it was led by Tevfik Sırrı Gür, who was the Governor of Elazığ [15].

The People's House project, despite Tevfik Sırrı Gür not being an architect, was drawn by him. After the project was submitted to the Technical University and necessary corrections were made, construction began [16].

Like every People's House, the publication organ of Elazığ People's House was Altan Magazine. Between 1935 and 1939, a total of 48 issues of the magazine were published [17].

Beginning with Atatürk and including the state officials of the period, Elazığ People's House hosted numerous guests. From 1952 to 1972, it functioned as a Girls' Primary Teacher School, and from 1982 onwards, it served as a high school and a 2-year education institute. In 1983, it was converted into a teacher's dormitory with a capacity of 27 beds (Figure 9). In 1991, a 3-story building with a capacity of 33 beds was added to the premises, which was demolished with the permission of the conservation board [18].

Figure 9. *The People's House converted into a teachers' house [19]*

The building has been transferred to Elazığ Municipality and currently sits vacant. It sustained partial damage in the earthquakes of 2020 and 2023, prompting plans for its restoration in the near future [18]. Architect Özgür Sevim prepared the survey, restitution, and restoration project for the building, which was approved by the conservation board in 2023. Restoration work is expected to commence soon.

5.1. Location and Urban Relationships

With the proclamation of the Republic, new urban planning decisions were made in cities. Accordingly, each city was designated to have a boulevard or Atatürk Avenue, with main roads organized along these avenues and leading to Republic Squares intersecting with these streets [1]. Symbolic structures of the period such as People's House and the Atatürk Statue were also designed along these avenues or squares.

Upon request from the Republican People's Party, the Governor of Elazığ, Tevfik Sırrı Gür, was tasked with conducting a study on establishing a People's House in Elazığ. Tevfik Sırrı Gür, known for implementing city plans in every province he administered, emphasized that Elazığ lacked a modern city plan and functional buildings. He prepared and implemented an urban plan for Elazığ, which included a Republic Square in the neighborhood with People's House as the central structure, surrounded by the Atatürk Statue, Children's Playground, Gymnastics Area, Open Stage, Cinema Machine Room, Local Hospital, Stadium, Indoor Sports Hall, Culture Park, Swimming Pool, Shooting Range, and Elementary and Middle School Buildings [16] (Figure 10).

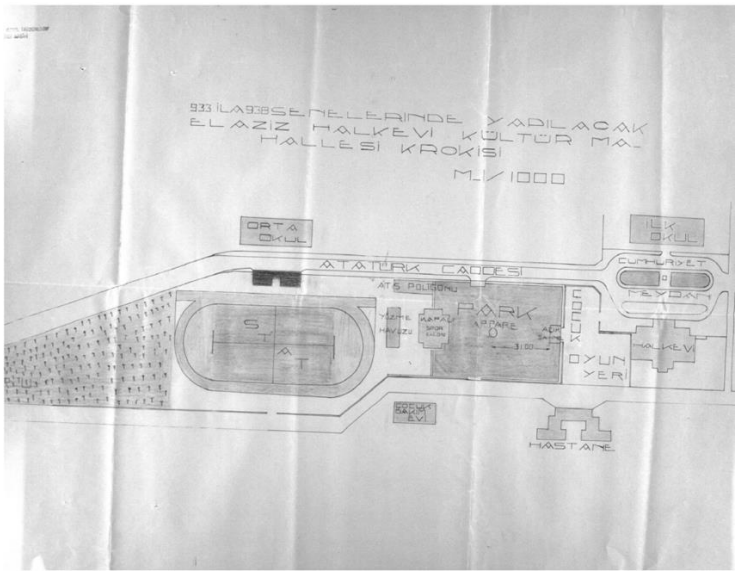
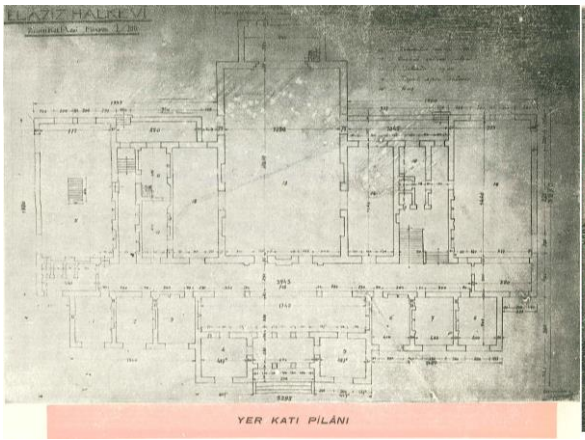


Figure 10. *The urban plan of Kültür Neıghbourhood designed by Tevfik Sırrı Gür [16]*

5.2. Architectural Features

Elazığ People's House building's spatial layout is functionally based. It features a cubic architecture formed by the integration of various functional units. The building has a T-shaped plan. The units are symmetrically arranged to the right and left of the entrance.

The structure has a partial basement, with part of it being above ground and part below ground level. The entrance is located to the north. From the entrance hall to the entrance foyer, and from there to the east and west wings, access is provided via a central corridor (Figure 11). Rooms are located on both the east and west sides of the entrance. There are lobbies on either side of the multipurpose hall. Adjacent to the lobby on the right is the assembly hall, and adjacent to the lobby on the left is the library (Figure 12).



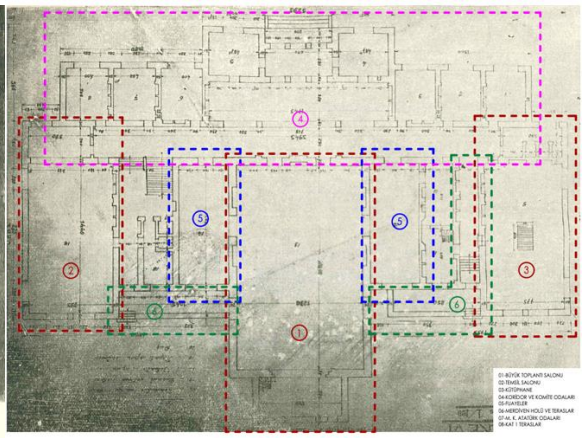
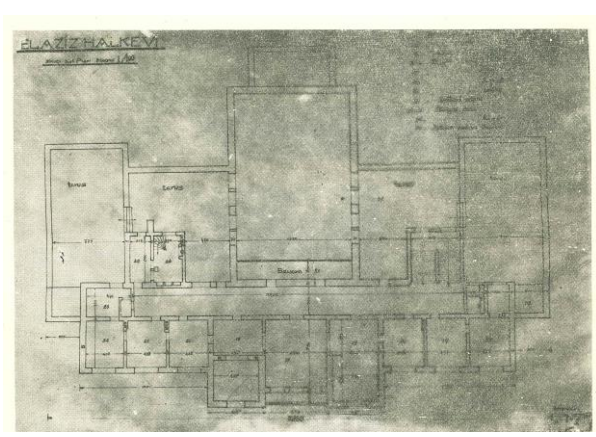


Figure 11. *Ground floor plan of Elazığ People's House [18]*
Figure 12. *Units on the ground floor of Elazığ People's House [18]*

Opposite the entrance, there are two door openings leading to the multipurpose hall (Figure 13). At the end of the rectangular main hall, there is a stage structure.

Figure 13. *A view from the multipurpose hall [20]*

In the west wing, access to the upper floor is provided via a double-armed marble-clad main staircase. The units on the first floor reached via the main staircase are arranged around a corridor (Figure 14). Currently, the main halls in the east and west wings on this floor have been added to the structure later. Originally, the spaces above the foyer, assembly hall, and library were designed as terraces (Figure 15).



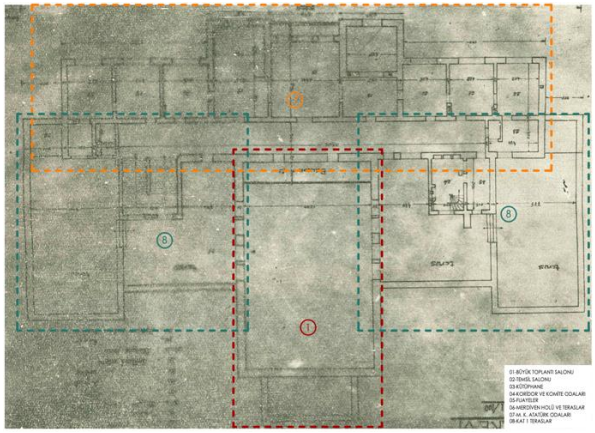


Figure 14. *First floor plan of Elazığ People's House [18]*
Figure 15. *Units on the first floor of Elazığ People's House [18]*

In the present day, the building's original pitched roof covering has closed off these terraces. Above the assembly hall and library, new halls were added at an unspecified time. The floor height of the multi-purpose hall continues here as well. Units arranged around the main corridor were originally named Atatürk Rooms. This floor was prepared as the Atatürk Suite. One corridor houses two apartments consisting of a study, bedroom, bathroom, reception room, dining room, a separate dining area, rest rooms, and a bathroom [16]. Today, the eastern corridor side is home to the Atatürk Memorial Rooms. During the period when the building was used as a teachers' lodge, additional partitions were added to the structure to create new volumes. Architect Özgür Sevim described the structure in his survey and restitution reports as follows: *"The main hall of the building was closed off with wooden partitions, creating a corridor behind it. The original windows behind the stage were closed from the inside with wooden dividers. The balcony and stairs in the assembly hall were removed. Some doors to the rooms were closed. The staircase to the upper floor was changed. The main halls in the east and west wings on the upper floor were added later to the structure. It was found that there were more rooms originally on this floor prepared for Atatürk. It was understood that the room on the north facade, originally used as a single volume with three doors, is now divided."* [18].

5.3 Technology and Materials

The structure employs construction techniques and materials typical of its era and used in other People's Houses. Elazığ People's House was constructed using reinforced concrete construction techniques. It is clad with stone and brick. The original window and door frames are wooden. The double-armed staircase is covered with marble.

5.4 Facade

The north facade, also the entrance facade, is distinguished by projecting and elevated entrance section similar to crown doors from the main building wall (Figure 16). It was built as an early Republican era reinforced concrete structure. The facade is clad with stone (Figure 17).

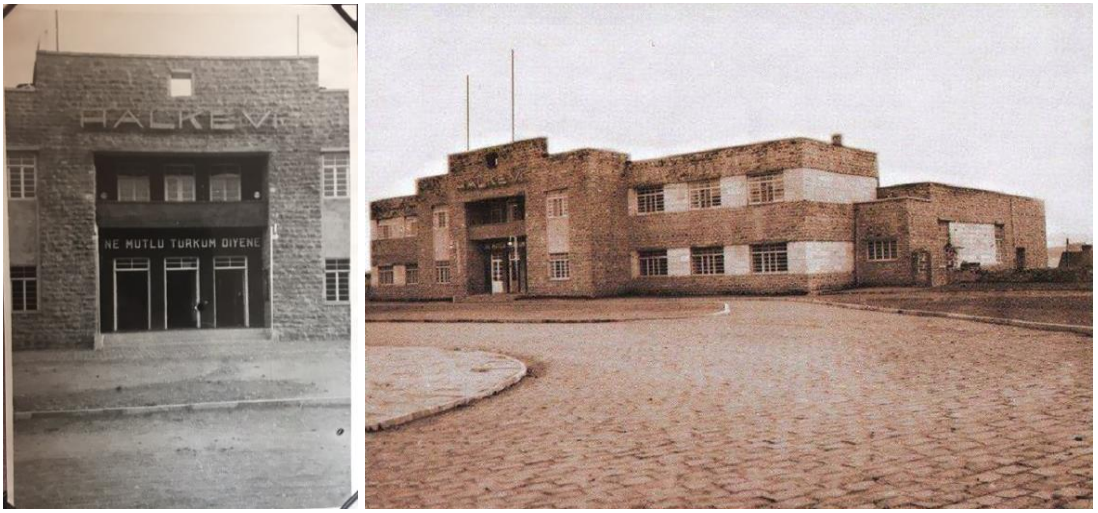


Figure 16. *The north facade of the building [20]*
Figure 17. *The facade of the Elazığ People's House [20]*

The building was originally constructed with a flat roof/terrace roof (Figure 18). In later periods, a pitched roof covered with Marseille tiles was added (Figure 19).

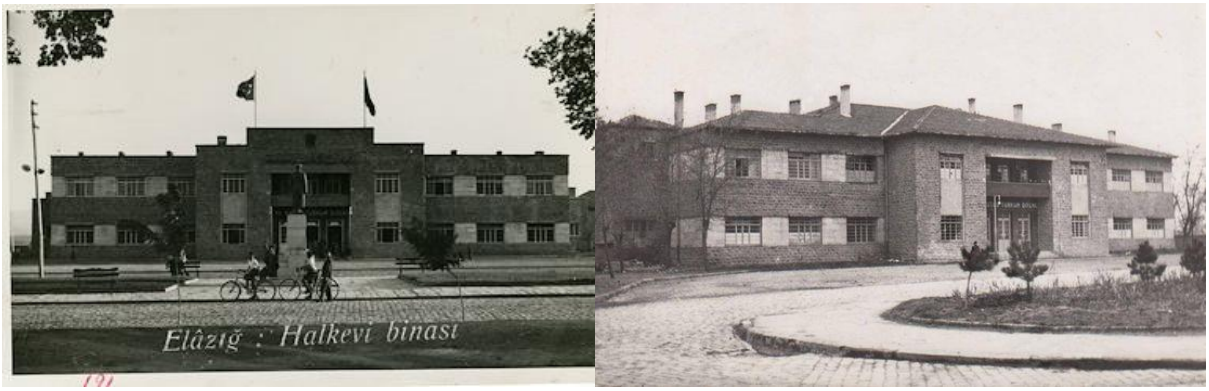


Figure 18. *The entrance facade of the Elazığ People's House [20]*
Figure 19. *The northern facade of the building with later added roofs [20]*

In later periods, a chimney was added on the east facade. Between the two windows on the east and west facades, a band was created with ashlar masonry (Figure 20). The reinforced concrete slab and beams of the upper floor added later are clearly visible on these facades in their current state (Figure 21).


***Figure 20**. The eastern facade of the Elazığ People's House [20]*
***Figure 21.** The additional floor added to the eastern facade of the building [19]*

In the middle of the south facade, the stage area of the multipurpose hall is prominent (Figure 22). Although a roof was added to the structure in subsequent periods, no addition was made to the stage area. There are entrances to the basement.

***Figure 22.** The current southern facade of the building [19]*

6. CONCLUSION AND EVALUATION

People's House Buildings, one of the most significant examples reflecting the modernity project within the framework of the nation-state ideology in Turkey during the 1930s, stand out as important architectural examples in Turkish architecture. Emerging with the proclamation of the Republic, the new buildings and spatial designs such as schools, hospitals, station buildings, and factories aimed at enlightening the public, People's House Buildings distinguished themselves during this period with their ideology and architectural composition. This is because the modernization project predominant in the 1930s found its best expression in Halkevleri, reaching the public through these institutions.

At the core of the opening of People's Houses was the aim to educate the public according to the requirements of the new regime. People's Houses served as educational institutions that disseminated the ideas of the new Republic, educating people in literacy, providing them with education in various arts, contributing to social development, and aiming to eliminate class distinctions. Therefore, they were institutions focused on people.

In addition to their educational roles, People's Houses became modern structures both physically and in terms of the values they embodied, using contemporary architecture of the period. They symbolized the new ideology better than other contemporary structures of the time. As mentioned earlier, located near the Republic Squares established in every city by the new Republic regime, People's Houses became symbolic structures alongside these squares, representing the cities.

People's House buildings, constructed as examples of international style, have become representatives of modern architecture with their floor plans, facades, functions, and materials used. This architectural style was employed to facilitate the modernization efforts of the new state. People's Houses replaced the traditional style of Türk Ocakları buildings, adopting a cubic, simple, and modern style devoid of ornamental details, referencing international and national socialism architecture [10]. These People's House structures built using new materials and construction techniques, along with their modern facade design, became symbols of modernity in urban areas under the newly established state [10].

Elazığ People's House, among the second phase of People's House buildings, served as a significant focal point for the city during its time. It embodies the architectural characteristics of its era through its construction technique, floor plan layout, and integrated functions. Located adjacent to the newly established Cumhuriyet Meydanı (Republic Square) in the city, Elazığ People's House was constructed alongside the Atatürk Statue, making it an important example of displaying state symbols through urban planning [16]. Elazığ People's House has also incorporated the symbols and signs typical of People's Houses.

Architecturally, Elazığ People's House stands out from other People's House buildings of its time. It exhibits both international stylistic features and a stylized version of the crown door, commonly used in Turkish civilizations, on its entrance facade. Unlike the Isparta People's House, which shows symmetrical features in its plan, Elazığ People's House was not planned as a single mass but rather as blocks arranged according to their functions. This approach, where different-height blocks merge, represents a modern architectural example considering its facade and the materials used.

The building, constructed using reinforced concrete technique and stone and brick cladding, exhibits material characteristics that embody modern architectural features. A distinctive feature of its cladding is the continuous band of finely crafted stone masonry, sandwiched between two full stone courses along the entire facade height, which wraps around and accentuates the front facade. The rising facade, characterized by this cladding style, can be considered a unique example in terms of its material composition.

Below is a table showing information about People's House buildings ordered by provincial governors or private offices, as found in the Elazığ People's House project (Table 2). Upon examining the projects of these People's House buildings, including Elazığ People's House, it is evident that they generally exhibit characteristics of international style. Some People's House buildings in cities like Adana and Mersin also display monumental features on their facades. Particularly, the plan type of Mersin People's House, consisting of a single mass, can be said to exhibit national architectural characteristics. It is observed that these styles, observed in close proximity to each other in terms of construction dates, sometimes intertwine. Due to their character reflecting both the international style and traces of ancient Turkish civilizations' architecture, People's House buildings constructed during the Elazığ People's House period occupy a distinct position among People's House buildings.

Table 2. *Examples of Community Centers built upon order by governorships or private offices (The table was created by the authors using the sources used)*

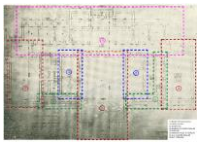
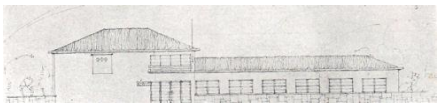
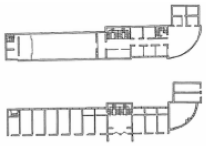
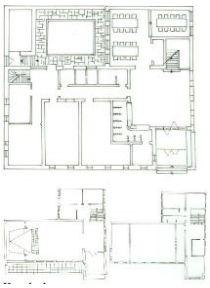
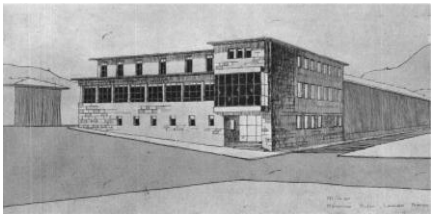
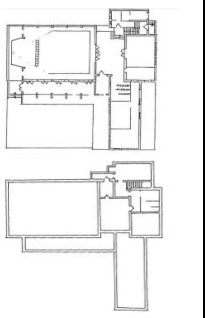
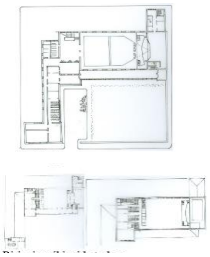
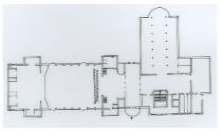
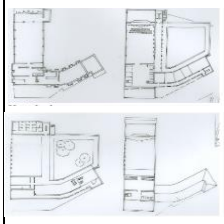
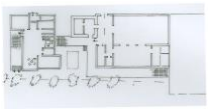
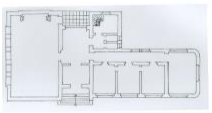
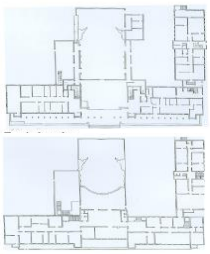
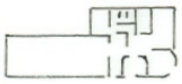
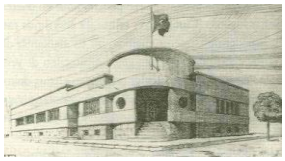
People's House	Architect of the building	Project Year	Plan Type	Plan	Facade
Elazığ	Tevfik Sırrı Gür	1933	T		
Düzce	Abidin Mortaş	1933	L		
Eskişehir	İzzet Baysal	1936	I		X
Gerede	Leman Tomsu Münevver Belen	1936	L		
Karamürsel	Leman Tomsu Münevver Belen	1936	L		
Kayseri	Leman Tomsu Münevver Belen	1937	L		
İzmit	Seyfi Arkan	1937-1939	L		

Table 2 (continued).*Examples of Community Centers built upon order by governorships or private offices (The table was created by the authors using the sources used)*

People's House	Architect of the building	Project Year	Plan Type	Plan	Facade
Şehremini	Leman Tomsu	1938	L		
Manisa	Asım Köürcüoğlu	1936	L		
Gebze	Selim Sayar	1939	L		X
Adana	Seyfi Arkan	1939	T		
İzmir	Rıza Aşkan Cahit Çeçen	1944	L		
Yalova	Sedat Çetintaş	1937	L		
Mersin	Tevfik Sırrı Gür	1946	Dikdörtgen		

Due to changes in its function over time, Elazığ People's House has almost lost its original architectural features from when it was first built. Recognized as an original and valuable structure of its period, efforts have been made to restore Elazığ People's House to its original state. Projects have been approved by the Diyarbakır Conservation Board of the Ministry of Culture and Tourism of the Republic of Turkey, defining a new function for the building as a museum.

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PART B: ART, HUMANITIES, DESIGN AND PLANNING

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An Innovative Residential Building of the Early Turkish Republican Period: İkinci Evkaf Apartmanı[1]

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Abstract

Kemaleddin Bey, who served as an architect in important positions for state institutions, is mostly renowned for his public building designs. However, residential buildings are also important in Architect Kemaleddin's career. During the heyday of the First National Architecture Movement, architects who embraced the trend followed certain rules in their designs so that an indigenous national style could be created and maintained. Nevertheless, these nationalist architects were still able to behave more flexibly when designing residential buildings in comparison to public buildings.This study focuses on how Architect Kemaleddin designed the İkinci Evkaf Apartmanı (Second Evkaf Apartment Building) in Ankara Ulus, one of the residential buildings where he could afford more flexibility and freedom in terms of design principles and architectural style, as well as structure, facade, and plan typology.This study aims to examine Architect Kemaleddin's approach to residential architecture, which is an everlasting concern for all segments of society, with a focus on his design for the İkinci Evkaf Apartmanı. In the research phase of the article, firstly the İkinci Evkaf Apartmanı was examined on site and the plans and projects of the building were obtained from the Ankara Vakıflar Genel Müdürlüğü Arşivi (Foundations General Directorate Archive). Afterwards, important newspapers and magazines of the period between 1918 and 1927, when Mimar Kemaleddin was actively designing houses in his professional life, were scanned. It is understood that articles were written with different attitudes, both traditionalist and modern, regarding housing architecture during this period. Architect Kemaleddin designed the İkinci Evkaf Apartmanı in such a contrasting environment, and it is seen that he was neither inspired by the traditional Turkish house nor designed a structure completely foreign to Turkish architecture.

1. INTRODUCTION

The İkinci Evkaf Apartmanı, which has its unique place among Architect Kemaleddin's residential building projects owing to its plan typology and construction techniques, proposed an unusual housing culture compared to the traditional residential architecture of Ankara in the 1920s. The building was designed to welcome a very social lifestyle with the various common areas it incorporated. During the period when the apartment was built, the intellectuals who observed the striking changes in the residential architecture of İstanbul had some concerns about how the Turkish House of the future should be. With the new regime making Ankara the capital, the focus on traditional residential architecture shifted to Ankara. However, there are also texts in the newspapers of this period that show modern style houses in Europe as examples and state that houses to be built in the future should completely depart from a historicist attitude (Table 1).[2] On the other hand, it is noteworthy that Kemaleddin Bey chose to realize this rather uncommon residential project for Ankara, at a time when there was a heavy emphasis bestowed upon virtues of traditional residential architecture by Turkish nationalist circles to which Kemaleddin Bey also

[1] The preliminary version of this paper was presented at the Mimar Kemaleddin Symposium organized by Gazi University Faculty of Architecture in Ankara on December 27-29, 2023.

[2] In this table, articles written about residential architecture in important newspapers and magazines such as Servei Fünun, Türk Yurdu, Milli Mecmua between 1918 and 1928 are listed along with their authors, subjects, and historical references.

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belonged, a discourse also manifested in various publications. Another important issue is what kind of a vision did Architect Kemaleddin have regarding the future lifestyle of the society in Ankara, the capital of the Republic of Türkiye, and what kind of a design did he make in line with this. The different social areas in the İkinci Evkaf Apartmanı are important clues in this regard. The aim of the study is to examine what kind of a residential building design did Architect Kemaleddin prefer for the capital Ankara in an environment where regime change was experienced, social structure was changing and different ideas were expressed regarding residential architecture.

The study method consists of two stages. First, the data collected through on-site examination and fieldwork at the Second Evkaf Apartment Building campus, as well as zoning plans, facade drawings and interior photographs obtained from the General Directorate of Foundations Archive, were used as sources. In the second stage, articles written in important newspapers and magazines about residential buildings between 1918 and 1927, when Kemaleddin Bey was active in his professional life, were examined. During these years, opposing views were expressed on how residential architecture should be in the future. While one group advocated that houses to be built in the future should be built by taking inspiration from the traditional Turkish house, the other group wanted houses to be built that were completely different from the traditional Turkish house.

As a nationalist architect, the İkinci Evkaf Apartmanı, designed by Architect Kemaleddin in the last years of his life, has a simpler form than his other buildings designed in the national style, thus showing that Kemaleddin Bey was making an effort to harmonize with the modern architecture of the era. On the other hand, when the interior decorations of the building and the fine decorative details on the facades are taken into consideration, it is seen that Architect Kemaleddin did not deviate from the national style line to which he devoted 30 years of his life in the design of this apartment building.

2. THE EMERGENCE OF MODERN ANKARA HOUSE

The late 19th and early 20th centuries present a timeline along which the late Ottoman and early Republican architectural agenda witnessed the implementation of various architectural styles in parallel, such as eclecticism, neoclassicism, Art Nouveau, as well as the First National Architectural Style. In the late 1920s, modern architecture began to show its influence, especially in the capital Ankara.This also was a period when significant changes occurred in Turkish residential life and hence architecture, which became, next to public buildings, a stage for the implementation of all these architectural styles [1]. This period saw more frequent use of multi-storeyed residential buildings and apartment houses. However, there was no sharp transition from detached houses to apartments. Öncel argues that there is an intermediate type between apartments and detached houses in Galata. In Goad maps, these family houses are called habitation to distinguish between apartments and large multi-storey family houses. Habitation is defined as a form of housing where each floor does not have its own service volume and the floors are not independent. [2] However, Öncel found that some family residences defined as habitation in Galata had kitchens and toilets on each floor. She defines these residences, which were built in the first half of the 19th century, as an intermediate type and states that a kind of collective life existed in Galata before the apartments [2]. Due to the housing shortage in İstanbul, the mansions built in traditional style began to be converted to rental apartment houses to accommodate multiple families [3]. This also caused significant changes and became a social phenomenon in the life of Turkish society, which had been living in detached houses for centuries.

The evolution of Turkish residential architecture became a subject of concern for people from different professional groups, such as painters, novelists, doctors, etc. (Table 1). Before 1923 and the Republican Era, the primary focus of architectural concern in terms of residential architecture was on İstanbul houses, where great changes in space organization, material, and building techniques were already underway. However, after 1923, the focus changed to Ankara, which was being swiftly reconstructed as a new capital city.Several authors examined the traditional houses of Ankara and commented on them in various magazines and newspapers, sharing their opinions on what new Ankara houses should be like. Similar to previous views on İstanbul residential architecture, these texts, especially written between 1925 and 1930, reflected two major views: one arguing that the Turkish House concept should inspire the new houses in

Ankara, and the other defending the modernist vision and demanding that houses should be designed completely free of traditional architecture (Table 1). It was in this transformational context that Architect Kemaleddin, who was already experienced in residential architecture owing to his realized projects in İstanbul, was given the task of building new houses for Ankara. Hence both Kemaleddin Bey's and his contemporaries' views on what modern Turkish houses should be like must have had a significant impact on the final architectural products.

3. TRADITIONAL HOUSE VS MODERN HOUSE DEBATE

The general feature of the articles written about traditional houses in the Late Ottoman - Early Republic Period is that these houses are introduced in detail together with their plans. In these articles, where traditional houses are called "Turkish Houses", the houses are described by focusing on features such as facades, interiors, and architectural materials (Table 1). And the interesting thing about these texts is the comments made about the fact that new houses to be built should have elements from the Turkish House. Many of these comments can be seen in the texts of doctor Sühely Ünver [4] and radiologist Rıfat Osman [5], who wrote serial articles about the Turkish House between 1925 and 1927, when intense construction activities were experienced in Ankara. Süheyl Ünver [4] and Rıfat Osman[5], who were doctors by profession, asked for help from experts at the end of most of their articles to continue the Turkish style in a way that would evolve into modern houses in the future. Similarly, Mübarek Galip [6] and Nureddin İbrahim [7] can be given as examples of writers who are not architects by profession but write articles about Ankara houses.

Architects Hikmet [8,9] and Ernst Egli [10], on the other hand, can be cited as examples of architects who wrote articles about the relationship between the Turkish House and the modern house. In a period when Ankara was undergoing intense construction activities, these architects cited Ankara houses and old Anatolian houses as examples of traditional houses in their writings. Architect Hikmet [8,9] has two articles on this subject, titled "Ankara's Houses" and "Turkish Architecture", published in the Türk Yurdu magazine in 1928. In his article titled "Ankara Houses", Arif Hikmet Koyunoğlu described Ankara houses in detail with photographs. In this article, Koyunoğlu stated that from the perspective of the architecture profession, there cannot be only one "Turkish House" because there are various traditional Turkish houses in different climates using different materials and construction techniques and stated that Ankara houses have an architectural nobility among these Turkish house types [8].

Table 1.

AUTHOR	WORK	SUBJECT	DATE	LOCATION	REFERENCE
Karoly Kos	İstanbul Şehir Tarihi ve Mimarisi	About how to modernize the traditional Turkish house	1918	İstanbul	Uğur Tuztaşı [1]
Hüseyin Avni	Eski Ev	About the increase in foreign buildings in İstanbul and old Turkish houses	1922	İstanbul	Dergah Mecmuası [3]
Servet-i Fünun	Asri Ev	Features of the modern house	1924	-	Servet-i Fünun Gazetesi [13]
Servet-i Fünun	Asri ve Medeni Ev	Features of the modern house with its plans	1925	-	Servet-i Fünun Gazetesi [13a]
Servet-i Fünun	Asri Bir Ev ve Dahili Manzaraları	Comparison of modern house and traditional house	1925	Munich	Servet-i Fünun Gazetesi [13b]
Servet-i Fünun	İlmi ve Asri Matbah Nasıl Olur?	Characteristics of modern cuisine	1925	-	Servet-i Fününn Gazetesi [13c]
Süheyl Ünver	Şark Odası	Features of a Turkish room	1925	-	Milli Mecmua [4]

Süheyl Ünver	Türk Evi	Features of the Turkish house	1925	-	Milli Mecmua [4a]
Süheyl Ünver	İzmit Hatıraları	Analysis of Izmit houses	1926	İzmit	Milli Mecmua [4b]
Süheyl Ünver	Amca Hüseyin Paşa Yalısı	It's about the decoration and preservation of the traditional house	1926	İstanbul	Milli Mecmua [4c]
Rıfat Osman	Edirne'de Türk Evleri	Examination of Turkish houses in Edirne with their plans, in three articles	1926	Edirne	Milli Mecmua [5]
Mübarek Galip	Ankara'nın Evleri	Analysis of Ankara houses	1926	Ankara	Muallimler Birliği Mecmuası [6]
Süheyl Ünver	Türk Evi Mimarisi Hakkında Birkaç Söz	About what a Turkish-style house should be like	1927	-	İstanbul Şehremaneti Mecmuası [4d]
Süheyl Ünver	Eski Türk Evinde Ocak	About the location and use of the hearth in Turkish houses and its applicability to modern houses	1927	-	Milli Mecmua [4e]
Nureddin İbrahim	Yeni Ankara'da Eski Türk Evleri	About the analysis of old Ankara houses and that those who do not know how to build traditional houses properly should leave the profession	1927	Ankara	Yeni Kitap Mecmuası [7]
Architect Hikmet	Ankara Evleri	Analysis of old Ankara houses and how old Turkish houses provide civil and sanitary conditions	1928	Ankara	Türk Yurdu [8]
Architect Hikmet	Türk Mimarisi	Contemporary features of old Turkish houses	1928	Ankara	Türk Yurdu [9]

Architect Hikmet [9], with a similar attitude, stated in his article titled "Türk Mimarisi" that traditional Turkish houses are suitable for today's needs and purposes in terms of plan and decoration. He emphasized that it would be possible to successfully determine the shape of the Turkish House with the inspiration taken from these houses [9]. Architect Hikmet emphasized that national identity can be achieved in newly built houses by examining and learning about traditional houses by Turkish architects, and concluded his article with the following words:

> *"Turkish intellectuals, who are heading towards the bright threshold of civilization, want to get rid of the neighborhoods and buildings that have become an international fairground day by day. "The distinguished people of the century are waiting for this Turk's own house and its definitive form from Turkish architects."* [9]

Ernst Egli [10], in his article "Mimari Muhit" published in Türk Yurdu magazine in 1930, criticized the houses built in Yenişehir in Ankara, saying that they had nothing to do with modern architecture and that these houses were degenerate Anatolian-house types. Egli stated that Ankara is a dusty and sunny place and that the residence style with flower beds is not suitable for this region. He said that old Anatolian houses faced inwards, that the houses closed themselves against the street and dust thanks to the courtyard, and that this courtyard structure protected the houses from the sun and created shade areas. Egli stated that these traditional houses, which are suitable for Ankara's climate, can be an example of modern houses to be built with modern tools [10].

While traditional residential architecture in Ankara was examined by some authors in the first quarter of the 20th century, examples of modern and contemporary houses were given in various magazines and newspapers (Table 1). Discussing whether traditional houses can serve as an example for newly built houses, the previously mentioned authors examined traditional houses in terms of their design aspects. However, when the texts written on this subject, especially between 1925 and 1930, are examined, some

writers criticize old houses negatively because they are unhealthy, neglected, and far from comfort. For example, Ahmet Haşim [11], in an article published in İkdam newspaper in 1928, said that the houses where Turks lived were full of holes everywhere and that these houses should be replaced with new houses as soon as possible [11].

In another text published in İkdam newspaper, with an unknown author, comparing Ankara of 1923 and 1928, the old houses in Ankara in 1923 are mentioned as piles of crooked mud-brick houses. On the other hand, it was said that in 1928, magnificent buildings and elegant mansions were built in Ankara in 5 years. This comparison in the İkdam newspaper is also supported by photographs (Figure 1). In the photograph of Ankara taken in 1923, there are old adobe houses at the foot of the mountain, and on the next page, there are photographs of Ankara taken in 1928 [11]. In these photographs, the İkinci Evkaf Apartmanı (Second Foundation Apartment Building)[3] and Foundation Houses, designed by Architect Kemaleddin, can be seen.

Figure 1. *İkdam Newspaper, News article comparing Ankara in 1923 and 1928* [11]

During the same period, apartment buildings, European-style houses, and examples of modern residential architecture were frequently seen in magazines and newspapers, especially in Servet-i Fünun magazine [13]. As readers became curious about these housing projects, which were introduced as modern houses in Servet-i Fünun, and asked about the plans of the houses, such examples were increased in the magazine between 1925 and 1930, and scaled projects were shared in the magazine so that the readers could have these houses built. These modern houses are shown as examples with various images in the magazine, and their useful aspects are emphasized with the short texts accompanying these images. In the magazine, examples of houses with rooms with different functions were given, and with these examples, what a modern house should be like was discussed. The examples of modern houses shown include customized rooms that are not found in traditional houses, such as the breakfast room, toilet room, and dining room (Figure 2) [13].

[3] In the rest of the article, the building will be referred to by its original name, İkinci Evkaf Apartmanı

Figure 2. *House example given in the article titled "Asri bir ev ve dahili manzaraları". Breakfast room, toilet room and dining room respectively* [13].

4. KEMALEDDİN'S APPROACH ON DESIGNING MULTI-STOREY RESIDENTAL

Although Architect Kemaleddin wrote many articles about architecture, none of them is expressly on residential architecture. In his article about the transportation problem in İstanbul, included in Tekeli and İlkin's[14] book titled "Architect Kemaleddin's Writings", Kemaleddin briefly touches upon his thoughts on residential architecture. In his article titled "Transportation Provision in the City of İstanbul" published in 1917, Architect Kemaleddin said that it would be wrong and harmful to imitate the residence styles of German and French cities without any examination. In this article, Architect Kemaleddin criticizes the multi-storeyed residential architecture designed for workers in European cities because it is unhealthy. He expressed how houses should be built with the following words:

> *"Except some neighborhoods of our cities, which imitate European cities and have a large population of Christians, it is the detached house style residential architecture that is generally very suitable for the country."*[14]

So Architect Kemaleddin approved the detached house model for Turkish residential architecture. Because, as he stated in his article, the detached house style has no drawbacks in terms of both health and social life. As an architect who studied in Germany and observed several multi-storeyed residences designed for workers, Architect Kemaleddin also stated that multi-storeyed residences should be prevented from prevailing in İstanbul [14].

In the newspapers examined, two texts titled "Takma ve Kabil-i Nakil Evler" [15] and "Harikzedegan Apartmanları"[16] were found, published in the Tasvir-i Efkar newspaper in 1920, in which Architect Kemaleddin wrote his thoughts on residential architecture. At that time, when there was a housing shortage in İstanbul, Architect Kemaleddin criticized these houses, which European companies brought to the Ottoman Empire, in terms of materials and usefulness, in his text titled "Takma ve Kabil-I Nakil Evler" (prefabricated houses). He said that although his country was the homeland of wooden construction, it was wrong to buy trees and boards from Europe in the form of a ready-made house built with European workmanship. In this text, Architect Kemaleddin emphasized that local materials and craftsmen should be used as much as possible in residential architecture. He also added that the houses to be built should be fire-resistant and sanitary. Architect Kemaleddin stated in his article that he had been researching for a long time how to build the most suitable houses in terms of both climate and lifestyle in the country at that time. He concluded the text by saying that, due to the housing crisis in the country in those years, he decided to take a break from the large building projects he had been occupied with until then and work on the sanitary and solid housing design that the country needed [15].

Architect Kemaleddin did not write the news article titled "Harikzedegan Apartmanları" [16] himself, but the person who wrote the text contacted Architect Kemaleddin and added his views to this text. In this

news article, the project prepared by Architect Kyriakidis, which was planned to be built for the fire victims who became homeless due to the Great Fatih Fire that occurred in 1918, was criticized and Architect Kemaleddin's opinion was asked about this issue. Architect Kemaleddin was quoted in this news article as saying that it was inappropriate to build such buildings that would have nothing to do with national architecture at a time when great efforts were being spent to give up apartment building life in Europe [16].

Architect Kemaleddin has seven known multi-storeyed residential designs. Among these buildings, Üçüncü Vakıf Han and Harikzedegan Apartments were built in İstanbul; the first, second, and third Evkaf Apartmanı buildings and Railways Apartments were designed for Ankara. Apart from these buildings, he also designed an apartment building in Jerusalem, but this design was later converted into a hotel by Nigizberk [17]. There are some differences between Architect Kemaleddin's multi-storeyed housing designs in İstanbul and Ankara. Considering Architect Kemaleddin's designs for both detached and multi-storeyed houses in İstanbul, it is understood that he mostly preferred a layout with a sofa. Only in Harikzedegan Apartments, among the different flat designs, it is seen that some of the flats are designed in which the internal circulation is provided only by the corridor [18]. However, when we look at the plans of both the detached Vakıf Houses and the Evkaf Apartmanı buildings he designed for Ankara, we see that the circulation between rooms is provided by corridors.

Architect Kemaleddin created common spaces in his housing designs both in İstanbul and Ankara. As mentioned before, Architect Kemaleddin was not very keen on apartment-type residences, but there was a necessity in both the multi-storeyed residences he designed for İstanbul and the common spaces he created in these designs. Üçüncü Vakıf Han, one of these buildings, is located in the Galata district of İstanbul. There are many Neoclassical style multi-storeyed residences around this building. Architect Kemaleddin must have designed the Üçüncü Vakıf Han building, which is his only building in the neoclassical style, owing to user preferences and the general architectural texture of the Galata district. Although he criticized the multi-storeyed housing design of Architect Kyriakidis for the Harikzedegan Apartment project, he also designed the Harikzedegan Apartment project to be multi-storeyed due to the insufficient budget allocated to this project and the necessity of meeting the shelter needs of many families in a short time [19]. Since fire victims would inhabit these buildings, common spaces such as coal sheds, laundry rooms, and courtyards have been created to provide the necessary comfort conditions. The purpose of creating a common laundry in the Üçüncü Vakıf Han building may have been to adapt to the environment because there were common laundry facilities in many multi-storeyed residential buildings in Galata at that time. For the İkinci Evkaf Apartmanı building designed by Architect Kemaleddin for Ankara, there was no obligation to create common spaces, as in the case of İstanbul multi-storeyed residential buildings. However, for his İkinci Evkaf Apartmanı project, he created various common spaces where the user can participate in artistic activities, play billiards, or drink coffee.

5. İKİNCİ EVKAF APARTMANI

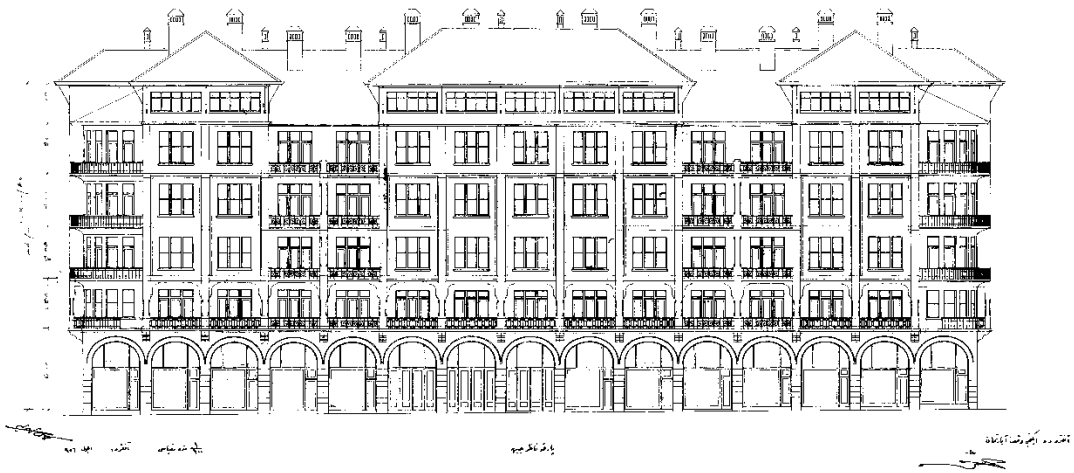

Figure 3. *İkinci Evkaf Apartmanı Front View* [20].

Architect Kemaleddin designed the İkinci Evkaf Apartmanı building in Ulus, Ankara, between 1926 and 1927, while he was working as the chief architect of the General Directorate of Foundations. The construction date of the building is between 1928 and 1930, after this death. The İkinci Evkaf Apartmanı, built right next to the plot where the Birinci Evkaf Apartmanı building and the Vakıf Houses are located, was one of the largest buildings built in Ankara at that time [17]. The building consists of seven floors, which include a basement and an attic (Figure 3). There are shops and a theater hall on the ground and first floors of the building, and apartments are located on the upper floors (Figure 4). There is a large open courtyard in the middle of the building. There is a theater in the section of this courtyard that rises to the second-floor level [20].

The building has four main entrances from the middle axis of all facades. Apart from the two stairs built to go up from the top of the Theater Hall, there are four stairs and four elevators leading to the flats. İkinci Evkaf Apartmanı building was built entirely with a reinforced concrete skeleton system and the building also had heating and ventilation installations [21].

The floor plans of the İkinci Evkaf Apartmanı building that have the richest content regarding space diversity are the ground and first-floor plans (Figure 5). Approximately three-quarters of the remaining area from the theater hall on the ground floor of the building consists of shops. Half of the ground floor on the front facade overlooking Gençlik Park consists of shops, while the other half is designed for a coffeehouse. There are double entrances on the east and west facades of the building, and beyond these entrances there are two courtyards, one closed and the other open. In a large part of the ground floor, there is a theater hall, originally called the Music and Oratory Hall, which later caused the building to be known as the Small Theatre (Figure 7). After entering from the west side of the building and passing through the courtyard, there are the main entrances of this music and oratory hall. At the end of the open courtyard, which is located next to the entrance from the west side of the building, there is an entrance to the backstage of the hall.

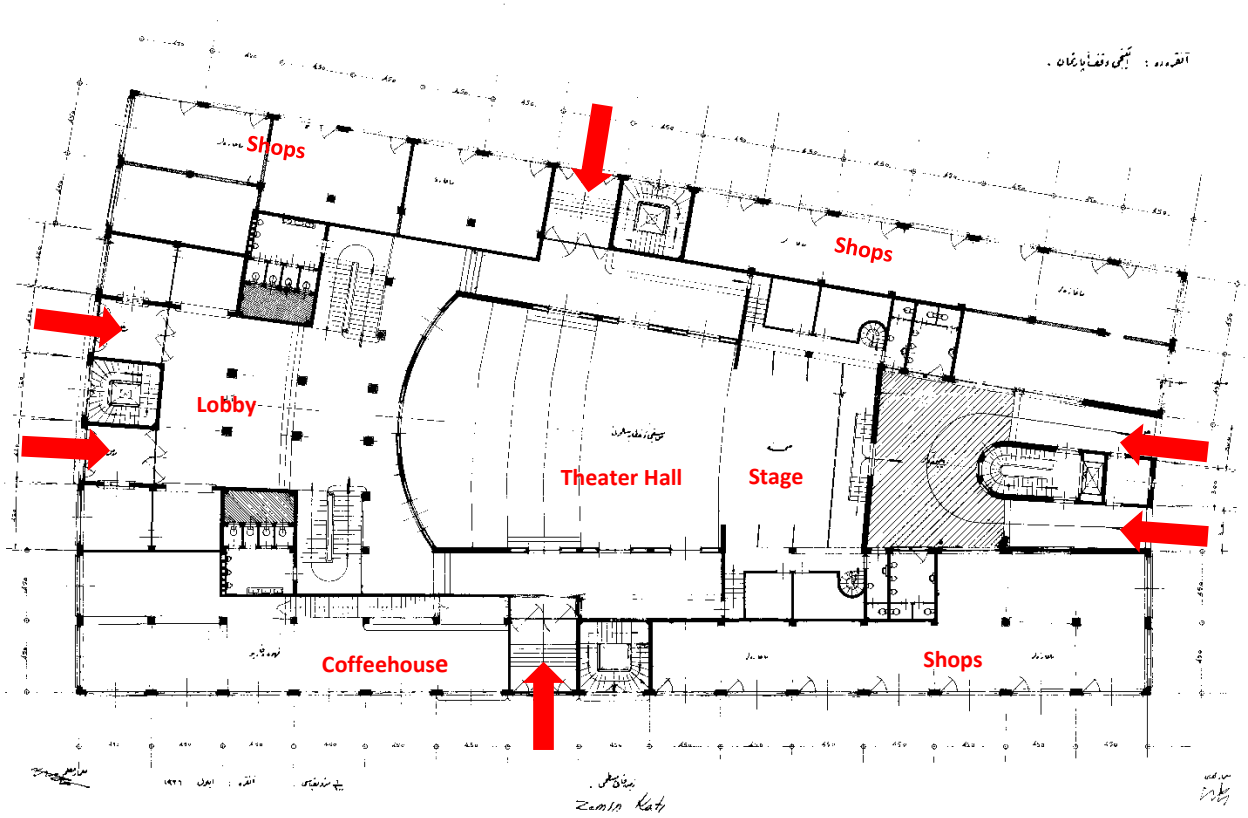

Figure 4. *İkinci Vakıf Apartmanı Building Ground Floor Plan* [20].

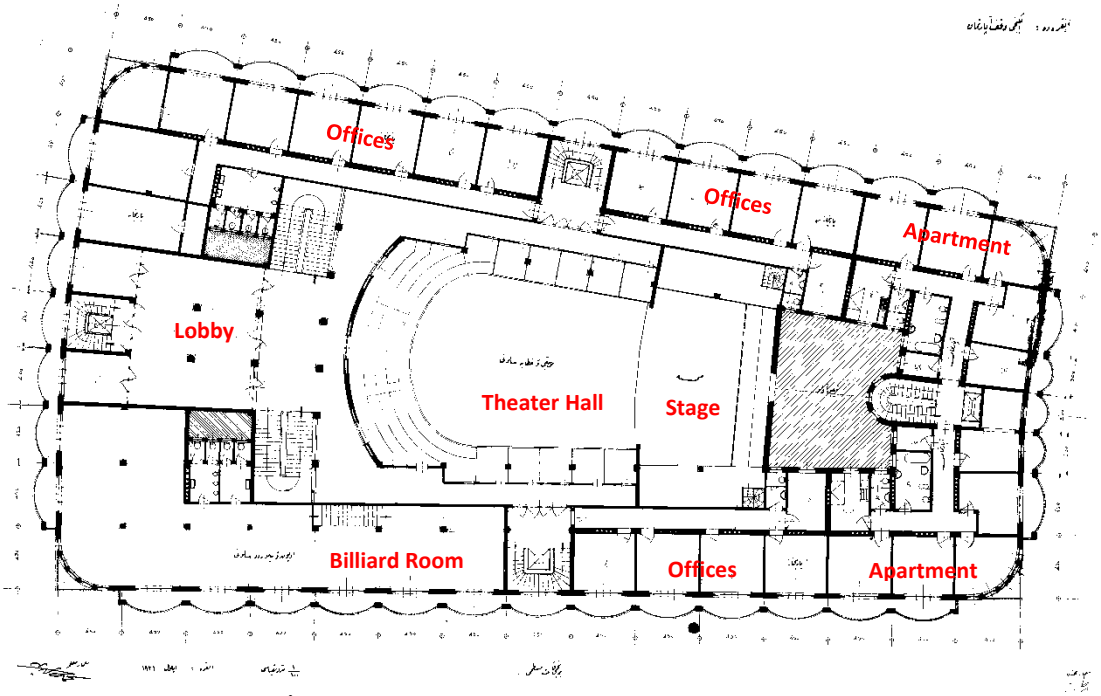

Figure 5. *İkinci Evkaf Apartmanı Building First Floor Plan* [20].

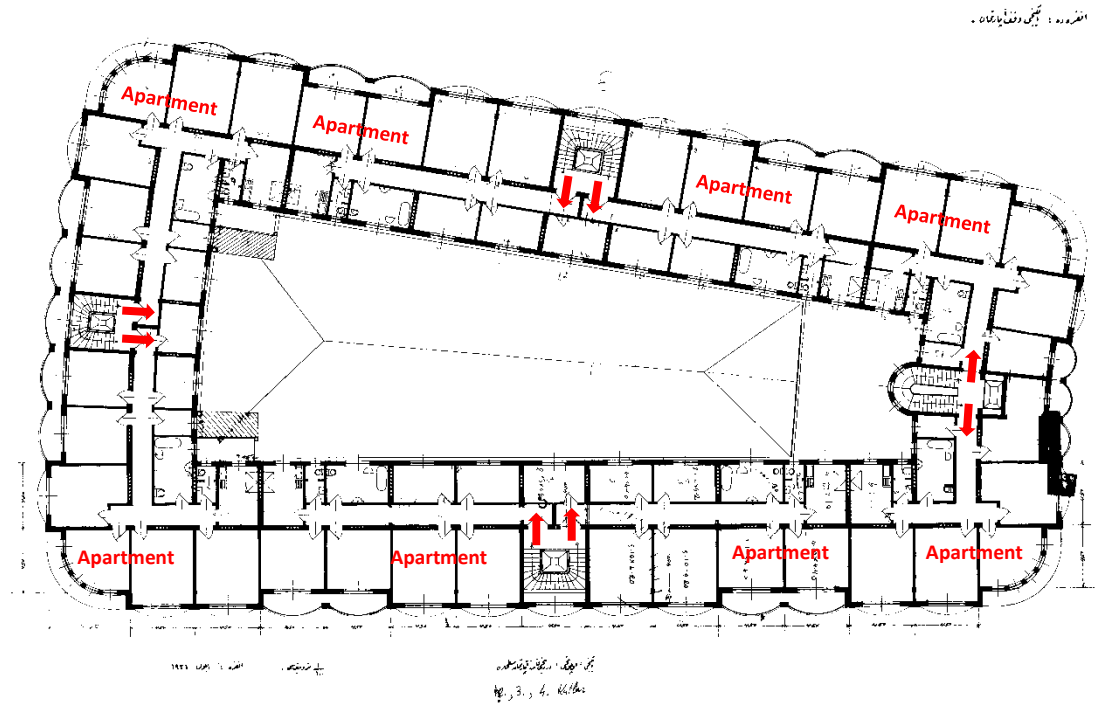

Figure 6. *İkinci Evkaf Apartmanı Building Second, Third and Fourth Floor Plan* [20].

Figure 7. *İkinci Evkaf Apartmanı Building Theater Hall (photos belong to the author).*

Spaces serving different purposes have been created in the first-floor plan of the İkinci Evkaf Apartmanı building, as in the ground floor plan. On this floor, there is the upper part of the theater hall. There are two stairs behind the main entrance of the hall, and these stairs lead to the upper part of the hall. On this floor, there are two long corridors on both sides of the theater hall, and the doors in these corridors provide access to the lodges at the upper part of the hall. A game and billiard room was designed on the first floor, above the coffeehouse section on the ground floor The game and billiards room on the upper floor can be reached via the stairs inside the coffeehouse. On the first floor, there are offices accessible from the stairs leading to the apartments in the north and south sections of the building. There are 18 offices in these areas, which are divided in a similar way to the apartments in the typical floor plan. In addition to the theater hall, game, and billiard room, and offices, the first floor plan also includes two apartments [20].

Architect Kemaleddin's satisfaction with the variety of spaces he created when he designed the İkinci Evkaf Apartmanı building can be understood from his words in a letter he wrote to his wife, Sabiha Hanım. He wrote the following words to his wife:

> *"This building, which will be built next to the foundation houses, overlooking the park, has a decorated music hall with a foyer and toilets on the first and second floors, a large casino, billiards and game halls, numerous shops, offices, and residences. It will contain apartments with all needs and sanitary equipment on the third, fourth, and fifth floors. The number of apartments is twenty-six. The music hall will be isolated with the latest isolation system and air conditioning equipment so that it will be cool in summer and warm in winter."*[17]

The typical floor plan of the İkinci Evkaf Apartmanı building is designed to have eight apartments on one floor (Figure 6). It can be said that the communication between the apartments is weak since every two apartments on the floor are accessed via one staircase. Therefore, although spaces were designed on the ground and first floors of the building to gather users together and strengthen communication between each other, common areas were not created in the floor plans where the flats are located. When the space distribution in the flats is examined, it is understood that the service areas are located facing the courtyard, while the rooms are located on the periphery of the building. Circulation between rooms is provided by long and narrow corridors (Figure 8). The sizes of the rooms in the apartments are almost the same. In the houses of that period, rooms began to be customized and used for different functions, as in European-style residential architecture. However, since the dimensions of the rooms are approximately the same, it is not possible to distinguish between the living room, dining room, or bedroom [20].

Figure 8. *İkinci Evkaf Apartmanı Building Interior Photos* [20].

The facade design of the building is simple and balanced and generally devoid of decorations. On the other hand, the details in the balcony sections have ornaments like muqarnas-headed columns or decorated iron railings that will break this simplicity (Figure 9). The floors above the shops on the ground floor were extended outside and wavy stone consoles were placed under the balconies on the first floor. The building facade was designed symmetrically. The corners of the building are chamfered. The corners of the rectangular balconies on the western facade facing the street were beveled, and the tops of the balconies on the northern and southern facades were designed with semicircular arches. Thus, the sharp appearance of the facades was softened and a holistic softness was given to the facades of the building. The roof of the building has wide eaves and the facade reflects the characteristic features of the national architecture with its eaves.

While other buildings in the national style, such as the Osmanlı Bankası, 1.Meclis Binası, 2.Meclis Binası, Ziraat Bankası and Ankara Palas, located near the area where Evkaf residences were built in Ankara, have national architectural elements on their facades, the İkinci Evkaf Apartmanı was designed in a very simple layout compared to these buildings.Architect Kemaleddin did not choose to use the pointed arch windows, which he used in many of his buildings, on the façade of İkinci Evkaf Apartment. In addition, the national architectural style reveals itself with the pointed arch windows, masonry railings and plaster relief decorations in the detached Evkaf Evleri located in the same area as the İkinci Evkaf Apartmanı. Therefore, considering the other buildings in the surrounding area and especially the detached Evkaf Houses, it is interesting that Architect Kemaleddin designed the façade of the İkinci Evkaf Apartmanı in a simple layout.

Figure 9. *İkinci Evkaf Apartmanı Building Facade Photos (photos belong to the author).*

7. CONCLUSION

In 1920s, the written media such as "Türk Yurdu" and "Milli Mecmua" which were affiliated with Turkist societies, were increasingly publishing articles detailing the need to inspire from the traditional Turkish house for the design of modern houses to be built. The authors of these articles were contemporaries of Architect Kemaleddin, who also was a Turkist and member of Türk Yurdu Society and wrote for its magazine regularly. Among the nationalist authors writing for Türk Yurdu, we can for example name Hikmet Bey, who was also an architect. Hence this nationalistic discourse of Turkist media promoting traditional houses coincided with the design period of İkinci Evkaf Apartmanı Building by Kemaleddin Bey, which calls to mind a possible media and politics influence on his design process. As was, he was known to participate discussions related to architecture on media; for example when newspapers were publishing articles about residential architecture in İstanbul and emphasizing the housing crisis there, Architect Kemaleddin also contributed to the discussion with his own articles. Therefore, as one of the important nationalists of the period and an architect who took important roles in producing residential architecture in Ankara, Architect Kemaleddin must have been aware of what was written about the ideal Turkish house in the publications of the Turkist societies to which he himself also belonged. Moreover, Architect Kemaleddin's all articles on residential architecture, which date to pre-Republican period strongly reflect the idea that the most appropriate housing typology in terms of the lifestyle, welfare, and health of the society was the detached house. Architect Kemaleddin strongly rejected the European-style multi-storeyed residential buildings at that time.

Kemaleddin's later views on residential architecture after the proclamation of the Turkish Republic did not appear as written articles, however the residential buildings he designed for Ankara and especially İkinci Evkaf Apartmanı building must be representative of these new ideas. As is, this new tall apartment house's discord with his previously expressed thoughts about the unsuitability of multi-storeyed residential buildings for the lifestyle of Turkish society is striking. Still, this is a residential building designed so that people could live a prosperous and healthy life, which was Architect Kemaleddin's main objective for housing projects all along. It should be noted that Architect Kemaleddin's pre-republican articles were expressing his thoughts on residential architecture for the welfare and quality lifestyle of late Ottoman society. But then, with the residential buildings he designed for Ankara and especially with the İkinci Evkaf Apartmanı building, his motivation was still the same, but in the service of an evolving new society. The civil servants who were meant to rent the flats in İkinci Evkaf Apartmanı actually represented the new Republican generation. Therefore, İkinci Evkaf Apartmanı building is arguably a residential structure designed by Architect Kemaleddin in alignment with this envisaged change in Turkish social structure and according to his interpretation of this social and cultural evolution of Turkish urban society exemplified by the civil servants residing in the new capital city of Ankara.

It can be said that the architect Kemaleddin did not agree with the idea of recreating the traditional Turkish house in a modern style, which was written with a nostalgic attitude by the intellectuals of the period. Because the İkinci Evkaf Apartmanı differs from traditional houses in terms of both plan and facade design, except for the wide eaves on the facade design. Traditional houses have a closed design with a courtyard structure. However, the İkinci Evkaf Apartmanı offers a lifestyle where people are close to each other due to its feature of being a multi-storey residential building and at the same time, different social areas have been designed in this building.In the İkinci Vakıf Apartmanı building, a very social area has been created in this building, as there are also apartments on the first floor, where there is a theater and a billiards room that can be used by the public from outside. Again, this feature represents a sharp departure from traditional houses.

İkinci Evkaf Apartmanı is a residential building that keeps communication between its users at a high level owing to its common spaces such as the theater hall, billiard room, offices, coffee-house, and laundry. The large theater hall inside this building was designed to accommodate not only the residents of the İkinci Evkaf Apartmanı building but also people coming from outside. The shops and coffee-house on the ground floor of the building also serve both residents and outsiders. Therefore, İkinci Evkaf Apartmanı provides its users with a strong communication, not only among themselves but also with external urban life. While designing the social common spaces in the İkinci Evkaf Apartmanı, Architect

Kemaleddin must have prioritized the users current and predicted or improvised needs, as was the case in his previous residential building projects. He arguably fulfilled his duty as an architect to address the detected changes in society with his designs. And though his preference for residential architecture was the detached house, he worked with a certain impartiality, while achieving the required multi-purpose building program for a modern Ankara housing project over a multi-storeyed structure. However, Architect Kemaleddin carried out this task so well that there was no second building accommodating such a variety of so popular spaces in Ankara at that time.

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Architectural Change in Hospitals from the Ottoman Empire to the Republic of Türkiye[1]

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Abstract

The Ottoman Empire, which continued to develop and utilize the state system inherited from the Anatolian Seljuks, also initiated significant reforms in architecture primarily during the reign of Sultan III. Ahmed. These reforms began primarily in the military sphere before permeating into society and manifesting themselves in the field of healthcare. With the establishment of the Ministry of Evkaf and Ebniye in the early 19th century, traditional hospitals (darüşşifas) were replaced by new-style hospitals. During the radical transformation in the state system in the early 19th century, referred to in Ottoman sources as the 'Reforms of Mahmud II', various changes occurred in the healthcare sector as well. Traditional hospitals designed like madrasas were replaced by Military and Civil hospitals where infectious disease wards were separated by high doors. Subsequently, the infectious disease wards evolved into separate buildings, and hospitals were designed as independent units. From the mid-19th century onwards, traditional hospitals gave way to modern hospital buildings. These newly designed healthcare facilities, referred to as 'hospitals' in contemporary sources and inscriptions, introduced a new architectural typology. The architectural style of these hospitals initially followed neoclassical and eclectic styles, later transitioning to national architectural styles. With the advent of the Republic, needs were identified in various fields including politics, economy, society, education, and healthcare. Policies were formulated to meet these needs and achieve a contemporary structure. Wars and epidemics during this period highlighted the inadequacy of healthcare facilities, leading to the necessity of constructing new buildings. Furthermore, modifications and additions to existing structures and changes in hospital layouts to meet evolving needs played a significant role in the emergence of modern hospital buildings, often in the form of independent units (pavilions). Teams including prominent architects such as Kemalettin Bey contributed to the development of hospitals during the Early Republican period, serving as pioneers for future constructions. This study aims to examine the architectural changes experienced during the evolution of the darüşşifas, inherited from the Seljuks and used during the Ottoman period, into 19th-century hospitals, focusing on plan and façade arrangements. By presenting examples of the transition from traditional health institutions within the borders of modern Turkey to modern health facilities, significant changes are highlighted through architectural analyses based on plan diagrams. The findings reveal that the legacy inherited from the Seljuks was developed and utilized in Ottoman darüşşifas, and these structures were reorganized and planned according to the needs of the period. This process led to the creation of a new synthesis that advanced previous structures and, through these developments, demonstrated a significant evolution of health facilities up to the 19th century.

1. INTRODUCTION

In the Ottoman Empire, healthcare and medical education services were initially provided in darüşşifas (hospitals) and medical madrasas (schools) built during the Anatolian Seljuk period. Subsequently, based on the architectural knowledge inherited from the Seljuks, new darüşşifas were developed. Many of these hospitals were accompanied by medical madrasas, which ensured the training of physicians to provide

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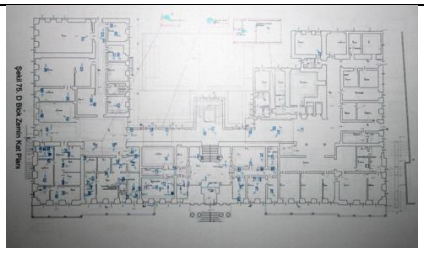
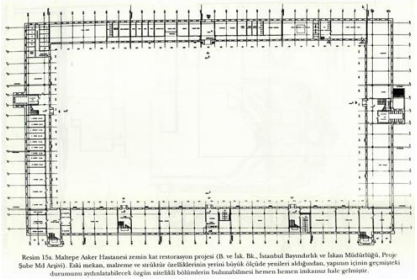
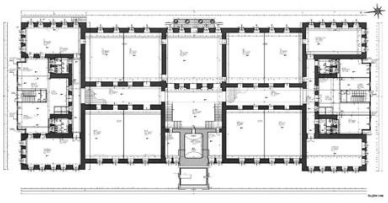
healthcare services. Thus, they served both as providers of public health services and as significant educational institutions in the field of medicine. The darüşşifas of the Anatolian Seljuk period were constructed as large, sturdy buildings adhering to the floor plan of madrasas, which were educational structures characterized by iwans (vaulted halls) and colonnaded courtyards. Many healthcare institutions established by the Seljuks continued their public duties during the Ottoman era. Darüşşifas built along trade routes to provide free healthcare services to travelers and merchants continued to be utilized during the Ottoman period. They laid the groundwork for future advancements in healthcare infrastructure and spearheaded progress in the field. Until the 18th century, darüşşifas in the Ottoman Empire fulfilled the need for healthcare services and remained operational. However, with the accession of Sultan Selim III to the throne, innovations were introduced in various domains, including the military and healthcare sectors, thereby influencing both architecture and healthcare practices. Subsequently, traditional darüşşifa structures gave way to Military Hospitals, which can be regarded as the initial step towards modern hospital buildings.

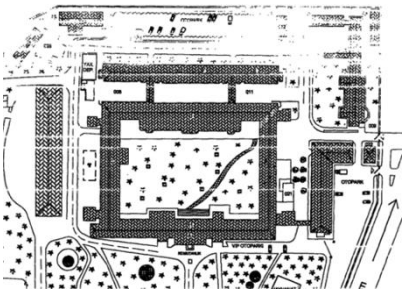
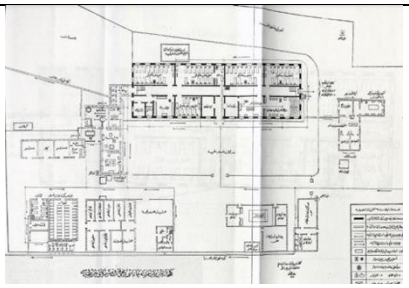
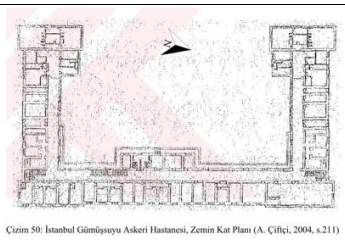
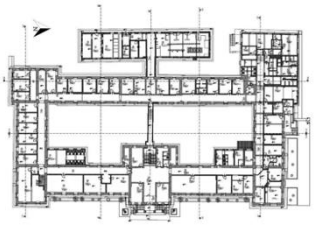
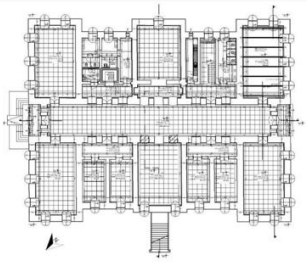
2. 19TH CENTURY OTTOMAN HOSPITALS

2.1 Military Hospitals as an Example of Transition to Modern Hospitals

With the onset of the reign of Sultan Selim III, the reflections of emerging and evolving technologies were evident in the military domain, prompting the initiation of steps towards establishing a modern army distinct from the Janissary Corps due to the inadequacies of traditional methods. This period witnessed a transformation that initially began in the military sphere before extending to society at large. Following the establishment of the Nizam-ı Cedid army, steps were taken towards modernizing military healthcare, with the opening of Military Hospitals in Istanbul, the capital of the Ottoman Empire, adhering to modern hospital standards, unlike the classical Ottoman darüşşifas.

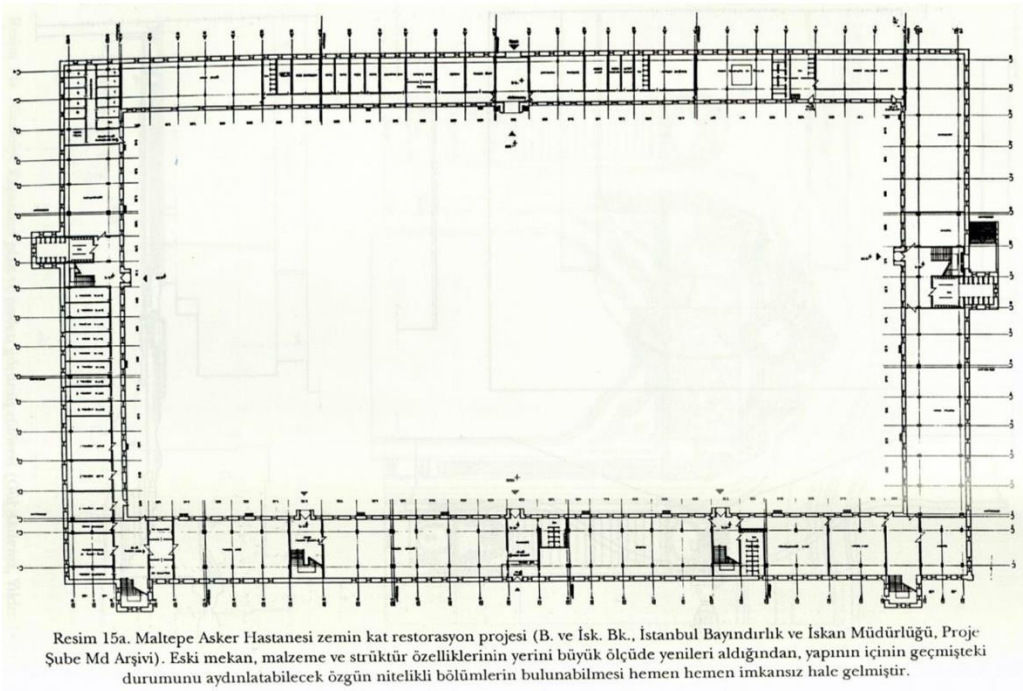
Table 1. *19th Century Military Hospitals That Have Reached Present Day*

Order	Hospital Name	Year	Period	Plans
1	Tersane-i Amire Hospital / Naval Central Hospital	1827	II.Mahmut	 (Atasoy,2022)
2	Maltepe Military Hospital	1827	II.Mahmut	 *(Akdeniz&Başağaoğlu, 2003)*
3	Bâb-ı Seraskerî Hospital	1828	Sultan Abdülmecid	 *(Istanbul University Archive)*

4	Haydarpaşa Military Hospital	1845	Sultan Abdülmecid	 *(Obtained from the Istanbul 6th Regional Directorate of Cultural Heritage Preservation Archives)*
5	Gülhane Military Hospital	1846	Sultan Abdülmecid	 (Atasoy,2022)
6	Gümüşsuyu Military Hospital	1849	Sultan Abdülmecid	 Çizim 50: İstanbul Gümüşsuyu Askeri Hastanesi, Zemin Kat Planı (A. Çiftçi, 2004, s.211) (Çiftçi, 2004)
7	Hadımköy Military Hospital	1891	II.Abdülhamid	 *(Sabuncuoğlu,2015)*
8	Zeytinburnu Military Hospital	1893	II.Abdülhamid	 *(From the Zeytinburnu Municipality Archives)*

Military hospitals were mostly constructed near barracks to serve the health needs of soldiers. Efforts to establish new regulations in the military domain, initiated during the reign of Sultan Selim III, continued into the era of Mahmud II, with the opening of military hospitals persisting. Although the majority of these hospitals have not survived to the present day, it is known that the earliest examples include the Tophane-i Amire Hospital, Levent Çiftliği Hospital, and the Bostancı Tüfenkçileri Ocağı Üsküdar Ortası

Hospital, all established during the reign of Sultan Selim III. Military hospital structures were further developed and constructed during the reigns of Mahmud II, Sultan Abdülmecid, and Abdülhamid II. These hospitals, which can be considered a synthesis of courtyard-style madrasas and barracks, feature a plan consisting of a closed corridor surrounding the courtyard and patient rooms opening onto this corridor. While the number of surviving hospital structures is limited, it is known that many hospitals were opened until the late 20th century. (Table 1)



Resim 15a. Maltepe Asker Hastanesi zemin kat restorasyon projesi (B. ve İsk. Bk., İstanbul Bayındırlık ve İskan Müdürlüğü, Proje Şube Md Arşivi). Eski mekan, malzeme ve strüktür özelliklerinin yerini büyük ölçüde yenileri aldığından, yapının içinin geçmişteki durumunu aydınlatabilecek özgün nitelikli bölümlerin bulunabilmesi hemen hemen imkansız hale gelmiştir.

Figure 1. *Ground Floor Restoration Plan of Maltepe Military Hospital" (Akdeniz & Başağaoğlu, 2003)*

One of the most significant examples among the military hospitals that have survived to the present day is the Maltepe Asakir-i Mansure-i Muhammediye Hospital, built in 1827. One of the characteristics that make this structure remarkable is its design from the outset to be one of the largest hospitals in Istanbul. The use of structures and arrangements such as darüşşifa, şifahane, maristan, darüssıhha, and bimaristan, with a courtyard surrounded by arcades facilitating the transition from semi-open space to rooms, continued until the era of Sultan Selim III and the establishment of the Nizam-ı Cedid army. Although the Maltepe Military Hospital is among the first examples of modern Ottoman hospitals, its layout, consisting of rooms opening onto a closed corridor from the central courtyard, bears many similarities to the traditional madrasa plan of darüşşifas (hospitals). Therefore, despite the changes made from darüşşifas to military hospitals, it generally maintains continuity with the barracks layout and the darüşşifa plan. Military hospitals, which continued to be opened until the end of the 19th century and were designed in a similar arrangement, were built especially during the reigns of Mahmud II, Selim III, Sultan Abdülmecid, and Abdülhamid II.

2.2 Gureba Hospitals as the First Civil Hospitals in the 19th Century

The first modern civilian hospitals were established in the 19th century, with the outbreaks of plague and particularly cholera playing a significant role in their establishment. Numerous outbreaks followed the first cholera epidemic in 1831, with the cholera epidemic in 1865 causing massive casualties, resulting in the deaths of around 30,000 people in Istanbul alone (Ayar, 2007). Improvements in healthcare services, which should be considered as part of the renewal efforts in the Ottoman Empire prompted by epidemic diseases, were reflected in the public's reception of the Gureba Hospitals. The first civilian hospital established under the name of Gureba Hospital in the Ottoman Empire was the Edirnekapı Gureba Hospital, which opened its doors in 1837 in the courtyard of the Mihrimah Sultan Mosque in Edirnekapı

(Yıldırım, 2014). Following this hospital, many hospitals were opened throughout the Ottoman territories to provide service under the name of "gureba"

Table 2. *Gureba Hospitals Constructed in Late Ottoman Period*

Order	Hospital Name	Order	Hospital Name
1	Bezm-i Alem Vakıf Gureba Hospital	12	Tarsus Gureba Hospital
2	Trabzon Hamidiye Military ve Gureba Hospital	13	Ordu Gureba Hospital
3	Balıkesir Gureba Hospital	14	Adana Gureba Hospital
4	İzmir Gureba-i Müslimin Hospital	15	Antalya Gureba Hospital
5	Erzurum Gureba Hospital	16	Karahisar-i Sahip Gureba Hospital
6	Mersin Silifke Gureba Hospital	17	İskenderun Gureba Hospital
7	Edirne Gureba Hospital	18	Isparta Gureba Hospital
8	Bolu Gureba Hospital	19	İnegöl Gureba ve Frengi Hospital
9	Ankara Gureba Hospital	20	Manisa Gureba Hospital
10	Rize Gureba and Military Hospital	21	İzmit Gureba Hospital
11	Kırklareli Gureba Hospital	22	Kastamonu Syphilis and Gureba Hospital

While the Edirnekapı Gureba Hospital emerged through the repurposing of an existing darüşşifa, the first known civilian hospital purpose-built for this function in the Ottoman Empire is the Bezm-i Alem Vakıf Gureba Hospital, which opened in Istanbul Yenibahçe in 1847. Answering the needs of the era and serving as the first modern institution for the destitute (gureba), this hospital was commissioned by the mother of Sultan Abdülmecid. (Kara Pilehvarian,2000)

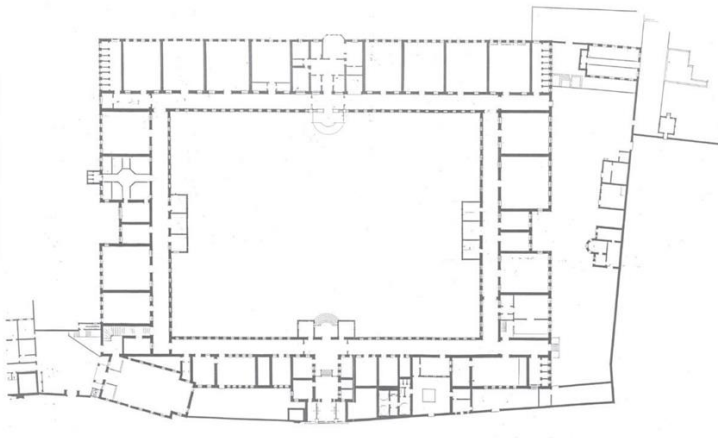


Figure 2. *Ground Floor Plan of Yenibahçe Bezm-i Alem Vakıf Gureba-i Müslimin Hospital (Kara Pilehvarian, 2000)*

Bezm-i Alem Vakıf Gureba Hospital, like military hospitals, adopts the barracks-style plan. Built for destitute male patients and considered the first modern example of "gureba" hospitals, Bezm-i Âlem Vakıf Gureba Hospital can be regarded as a transition from traditional darüşşifas with open arcades facilitating circulation to closed corridors. Its floor plan, consisting of patient rooms opening onto closed corridors surrounding a rectangular inner courtyard, aligns with the floor plans of traditional Ottoman darüşşifas. Only the open arcaded section in the traditional scheme has been converted into closed

corridors, with high and large doors placed at the beginning of each corridor, transforming them into independent four-sided wards. These high doors were designed to separate different clinics within the hospital and provide solutions to needs such as preventing the spread of contagious diseases as part of combating epidemic illnesses. *(Kara Pilehvarian, 2000)*

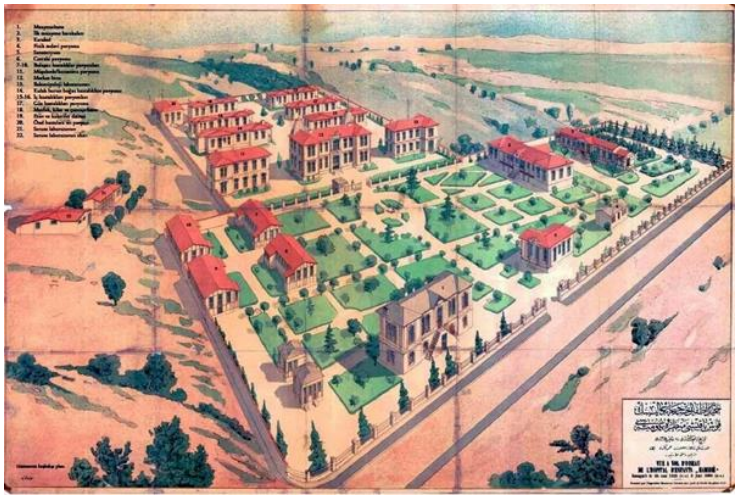
2.3 Hamidiye Hospitals of the Abdulhamid II Period

During the reign of Abdulhamid II, efforts to institutionalize modern healthcare services continued. Various floor plans were experimented with, and European standards, research, and implementation methods were closely followed. While the primary goal was to improve and expand existing hospitals, new typologies of buildings were also introduced with the opening of Hamidiye hospitals. Gureba hospitals, known as Hamidiye Hospitals during the reign of Abdulhamid II and later as Millet Hospital, Municipality Hospital, etc., aimed to promote public health, combat infectious diseases, and modernize vaccination technology.

Table 3. *Hamidiye Hospitals Built Within the Boundaries of the Republic of Turkiye During the Reign of Abdulhamid II*

Order	Hospital Name
1	İzmir Hamidiye (Mithatpaşa) Military Hospital
2	Samsun Canik Hamidiye Hospital
3	Urfa Hamidiye Hospital
4	İstanbul Hamidiye Etfal Hospital
5	Antep Hamidiye Hospital
6	Bursa Hamidiye Hospital
7	Trabzon Hamidiye Military ve Gureba Hospital

One of the world's first children's hospitals, Hamidiye Etfal Hospital provided free services to children aged 0-16 without discrimination based on religion or race. Designed by Frans Niebermann outside the city center, the hospital adopted a pavilion-type (independent units) floor plan, which, despite circulation and service difficulties, was considered the best solution for preventing epidemic diseases. The first hospital structure built in this floor plan arrangement in the Ottoman Empire is the Istanbul Hamidiye Etfal Hospital, completed in 1899.



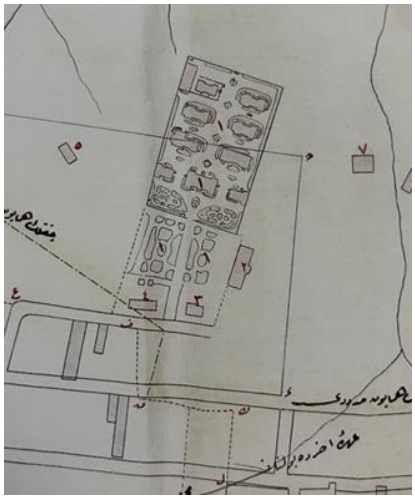


Figure 3. *Hand Drawing of Şişli Hamidiye Etfal Hospital Etfal Hospital (Yıldırım, 2010)*
Figure 4. *Hand Drawing of Şişli Hamidiye Site Plan(Yılmaz,2008)*

According to a pamphlet published in 1902, Hamidiye Etfal Hospital was established drawing on advanced European experiences, specifically modeling after Kaiser und Kaiserin Friedrich Kinderkrankenhaus in Berlin. A German architect was commissioned for the hospital, and the plans were presented to Sultan Abdulhamid II. Following the death of Hatice Sultan, Dr. İbrahim Bey returned from Germany and presented the selected Berlin plans to the Sultan upon a decree.It is noted in the pamphlet that architect Franz Niebermann originally trained as a carpenter, with another German architect also involved in the project. Additionally, Ebaiye-i Seniyye engineer Nâri Pasha played a significant role in the hospital's construction process. Documents found in the Dolmabahçe Palace Archive indicate that the hospital's details were designed by French-born Valluary, with Italian-born architect D'Aronco initially tasked with construction, later passing the responsibility to engineer Felix Pellini due to other commitments(İrez,1990).

The necessary installations and personnel arrangements for the hospital were finalized via the Saray Baş Kitabesi in May 1314 (1898-99). The selection and assignment of the healthcare team during the construction process could be considered forward-thinking even by today's standards. According to Hasan Rıza Zobuoğlu's memoirs, Dr. İbrahim Bey supervised the hospital construction daily and received compensation for this role.Unlike previous Ottoman hospital buildings, Hamidiye Etfal Hospital was designed in a pavilion layout, clearly reflecting the influence of German architecture in both its floor plan and facades. This innovative design departed from traditional Ottoman architectural styles, marking a significant shift towards modern European influences in healthcare facility design during the late 19th century(İrez,1990).

The effort to separate the wings of the Bezm-i Alem Gureba-i Müslimin Hospital according to their functions in the floor plan, which started with this hospital, continued to evolve with the design approach of Hamidiye Etfal Hospital, which first transformed all functions into independent units. In the floor plan consisting of closed corridors connecting patient rooms to a courtyard or garden, doors constructed at the height of the corridor were initially introduced as the first solution against infectious diseases. Subsequently, patient wards and clinics were designed as completely independent units, thus preventing the rapid spread of disease and reducing contact. The main entrance of the hospital, which was the first children's hospital in the Ottoman Empire, is located in the west, and it consists of a total of ten separate independent units. (Umar & Sarı, 2023) Following the appearance of madrasa-planned hospitals in the Early Ottoman Period and the emergence of barracks-type military hospitals in the early 19th century, the hospital floor plan designed as separate units emerged as a new layout in the second half of the 19th century. This new plan type emerged to combat epidemic diseases. Although successful in combating epidemic diseases, its structure, which complicates service and patient care, led to changes in this floor plan type in later periods, yet it pioneered new experiments.

3. 20th CENTURY HOSPITALS

3.1 20th Century Ottoman Hospitals

The first steps towards transitioning from traditional madrasa-style education to modern medical education in the Ottoman Empire were taken during the reign of Mahmud II with the opening of schools under the name "Tıbhane." The locations of these schools were constantly changed, and with the inadequacy of the buildings used in the early 20th century, the construction of a new building, which also included a teaching hospital for medical education, became a necessity. The construction of the building, initially named "Mekteb-i Tıbbiye-i Şahane," began towards the end of the 19th century, and its inauguration took place in the early 20th century. In the planning of the Haydarpaşa Mekteb-i Tıbbiye-i Şahane building, Italian architects Alexandre Vallaury and Raimondo D'Aronco collaborated.

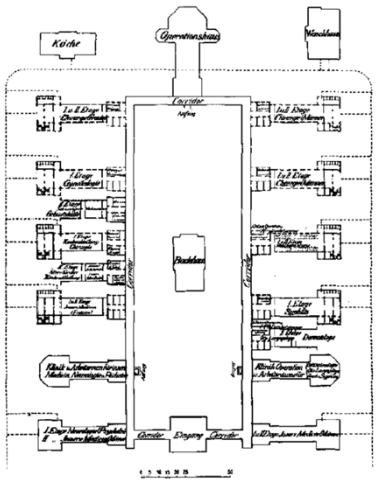


Figure 5. *Haydarpaşa Mekteb-i Tıbbıye-i Şahane Building Plan (Yavuz, 1988)*

Mekteb-i Tıbbiye-i Şahane Hospital, where independent units are connected by enclosed corridors, consists of initially designed two-story symmetrical pavilions positioned around a large rectangular courtyard surrounded by enclosed corridors, as well as other necessary service buildings. However, during construction, some changes were made, and the independent units were grouped into four blocks.
An important feature of this hospital is that it provided the most functional solution to the problems seen in other hospital structures. Designed as independent units to combat epidemic diseases, the presence of enclosed corridors connecting the buildings facilitates service circulation. At the same time, it is a successful example in terms of separating different areas from each other. (Yavuz,1988) In the early 20th century, due to the inadequacy of Bezm-i Alem Vakıf Gureba Hospital to meet the period's requirements and patient capacity, a committee was established by Evkaf Minister Hayri Efendi with the participation of architect Kemaleddin Bey. Architect Kemaleddin Bey and Dr. Adnan Bey were sent to Germany for education and observation purposes, where they examined the Riksdorf Hospital. Following the project inspections, construction of the new hospital began in 1910. (Yavuz,1988)

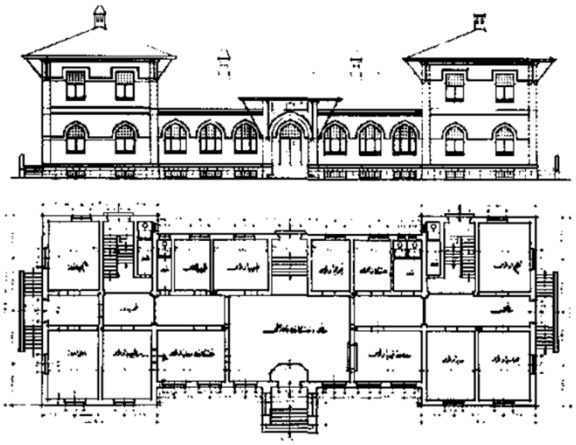
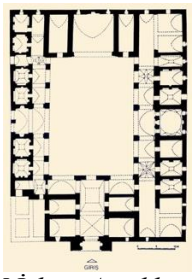
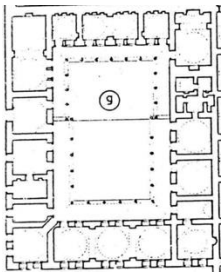
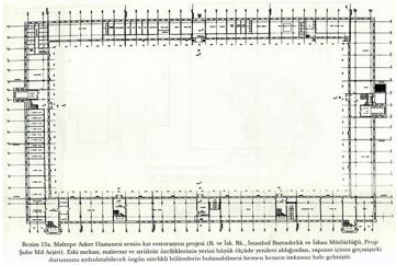
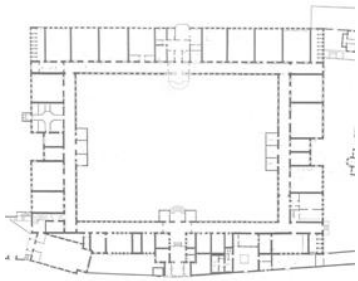
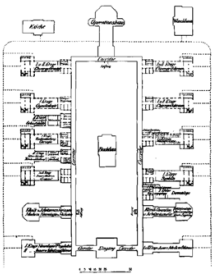


Figure 6. *The Plan and North Elevation of the Additional Building to Bezm-i Alem Vakıf Gureba Hospital by Architect Kemaleddin Bey (Yavuz, 1988)*

The current plans reveal that the hospital was designed as a larger complex, with three separate sets located at different levels. However, due to wars, only a portion of the structure was completed. The building was initially intended to be used as a polyclinic for Surgery and Internal Medicine, but due to the Balkan War and World War I, the completion of construction took a long time. In 1925, it was temporarily allocated to the Rabies Institute. (Yavuz, 1988)

Table 4. *The Evolution of Architectural Plans in Ottoman Hospital Structures*

İzzeddîn Keykâvus Dârüşşifası	Atik Valide Sultan (Ottoman Darüşşifa)	Maltepe Military Hospitals
 *(TDV İslam Ansiklopedisi)*	 *(Cantay, 1996)*	 *(Akdeniz&Başağaoğlu, 2003)*
Madrasa plan type	Madrasa plan type	Barracks plan type
There is a central courtyard surrounded by semi-open porticos and the use of iwans in four directions.	While the general layout of the Seljuk darüşşifas is maintained, the use of iwans in four directions is not observed	The barracks layout is in continuity with the tradition of darüşşifa. It is observed that the semi-open porticoed sections in darüşşifas have been transformed into closed corridors
Bezm-i Alem Valide Sultan Gureba-i Müslimin Hospital	Şişli Hamidiye Etfal Hospital	Haydarpaşa Mekteb-i Tıbbıye-i Şahane
 *(Kara Pilehvarian, 2000)*	 *(Yılmaz,2008)*	 *(Yavuz, 1988)*
Barracks plan type	Pavilion plan type (ındependent units)	Combination of barracks and pavilion plan types
Innovations include floor-height doors at the corridor beginnings to separate the infectious disease ward, and features like the sterilization room (autoclave).	It is designed as independent units to combat epidemic diseases and to separate different illnesses from each other.	The structure, designed as separate units to combat epidemics, facilitates circulation by connecting pavilions with corridors.

In 20th century Ottoman hospital plans, the most suitable plan scheme for the era emerged as a combination of the closed corridor system influenced by military barracks, which was first seen in the II. Mahmud period military hospitals, and the independent unit system observed in the Bezm-i Âlem Valide Sultan Gureba Hospital, with its adaptation of military barracks. The reason why this plan solution is considered the most valid for the period is due to its provision of secure service transportation between patient rooms and clinics without the need for outdoor access, as well as the organization of units into separate sections for the purpose of combating epidemic diseases. Additionally, it is evident that the service between the kitchen, laundry, sterilization room, and outpatient clinic buildings, which were intended to be carried out independently from the hospital pavilions, was planned to be mechanically

provided through a road surrounding the structure from the outside, thereby separating service circulation from internal circulation.

3.2 Changes in Hospital Buildings in the Early Years of the Republic of Türkiye

"Gentlemen, our ideal is to ensure the complete tranquility of our nation; just as it is our primary duty as the government to take care of its health and, to the best of our ability, alleviate its social woes.

Mustafa Kemal Atatürk

(TBMM Z.,C., Session 1, Volume:18, (1 March 1922), pp.3-4. Atatürk's Speeches and Statements, Volume:1, pp.237-238.)

After opening the Grand National Assembly of Türkiye shortly, Mustafa Kemal Atatürk, on May 3, 1920, established the Ministry of Health and Social Aid (Sıhhiye ve Muavenet-i İçtimaiye Vekâleti/ Ministry of Health and Social Assistance) taking the first steps in the field of health. Following the successful conclusion of the War of Independence, Dr. Refik Saydam, the first Minister of Health and Social Aid of the Republic of Türkiye who also played a significant role in public health during the national struggle, prepared a program to meet the necessary requirements in the health sector and introduce innovations for public health. (Altay,2019) The objectives of this program are as follows;

1- Expanding the healthcare organization,
2- Training physicians, midwives, and health officers,
3- Establishing sample hospitals,
4- Opening pediatric clinics in sample hospitals,
5- Establishing a tuberculosis sanatorium,
6- Combating malaria, syphilis, trachoma, and social diseases,
7- Inviting foreign specialists to combat infectious and social diseases,
8- Enacting laws related to health affairs to increase the health level of the population and requesting a budget allocation of one-fortieth from the state budget,
9- Establishing the Republic of Türkiye Central Institute of Public Health and the School of Public Health.


Yeni bir sağlık yuvası

250 yataklı ve çok asrî bir müessese olan Haydarpaşa Nümune hastanesi dün parlak merasimle açıldı

Sağda Vali muavini Hüdai hastaneyi açarken, solda davetlilere müessese gezdirilir ve izahat verilirken

Figure 7. *Opening Ceremony of Haydarpaşa Numune Hospital Newspaper Article from 1936*

Following the healthcare reforms of the 19th century Ottoman Empire, the newly established 'Gureba Hospitals' and 'Hamidiye Hospitals' were reorganized in 1924 under new regulations as 'Numune Hospitals'. Developed in accordance with the requirements of the time, these redesigned Numune hospitals were established in remote regions of the country to guide and set an example for local administrations, encouraging them to open hospitals themselves. These facilities, which played an effective role in combating infectious diseases, quickly gained the identity of educational institutions, contributing to the training of competent physicians.

Table 5. *The Gureba Hospitals Converted into Numune Hospitals*

Hospital Name	Before Conversion	Period Of Construction	Construction Year	Information
Ankara Numune Hospital	Ankara Gureba Hospital	II.Abdülhamid	1924	The existing structures, known as the central pavilion, stone pavilion, and external pavilion, have been renovated, while new pavilions named Refik Bey and Ismet Pasha Pavilions have been constructed.
Sivas Numune Hospital	Sivas Gureba Hospital	Mehmed Vahdettin	1924	The Gureba Hospital, established in 1919, was converted into a sample hospital starting from 1924. Later, due to the inadequacy of the old building, it was relocated to the American College building, and after a fire incident, it was moved to the Jesuit School.
Erzurum Numune Hospital	Erzurum Gureba Hospital	II.Abdülhamid	1924	Built with contributions from the people of Erzurum and based on the origins of the Gureba Hospital established by Sultan Abdulhamid II, the Gureba Hospital was converted into a Sample Hospital in 1924.
Diyarbakır Numune Hospital	Diyarbakır Gureba Hospital	II.Abdülhamid	1924	The existing buildings of the hospital, converted from the Gureba Hospital, were renovated and new additions were made. In 1936, a fire damaged many units of the central building, which was subsequently reconstructed in two blocks in 1937.
İstanbul Haydarpaşa Numune Hospital	Mekteb-i Tıbbiye-i Şahane	II.Abdülhamid	1936	The structure, the construction of which was initiated by Sultan Abdulhamid II in 1895, was converted into the Haydarpaşa Numune Training and Research Hospital in 1936.

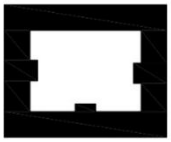
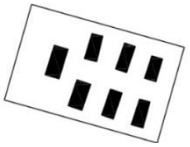
4. CONCLUSION

As a result, the transformation in healthcare structures from the Ottoman period to the early years of the Republic was shaped by the interaction of accumulated architectural plans and the requirements of the era. It can be said that the darüşşifa plans, originating from earlier Turk-Islamic states, shaped the hospital structures of the Early and Classical Ottoman periods. This plan type, which also included an educational institution, continued to be used in the 17th and 18th centuries. In the 19th century, following the reforms of Sultan Mahmud II, new schemes emerged for the first time in Military Hospitals, featuring separate wards for infectious diseases, sterilization rooms (etüv), and examples of education provided by certified instructors at the Mekteb-i Tıbbiye. These innovations, initially seen in military hospitals, were also evident in civilian institutions like the Bezmi Alem Valide Sultan Gureba-i Müslimin Hospital commissioned by Bezmi Alem Valide Sultan. In these examples (such as Maltepe Military Hospital, Bezmialem Gureba Hospital), the courtyards surrounded by porticoes seen in traditional darüşşifa plans were transformed into closed corridors with large windows opening onto the courtyard, sterilization (etüv) rooms were added, and large doors placed at the corridor entrances created independent units to combat infectious diseases.The next step in this transformation is the design model seen for the first time in Istanbul during the reign of Sultan Abdulhamid II, featuring independent buildings (pavilions) designed for different types of diseases. Thus, the hospital layout consisting of polyclinics and patient

rooms designed in separate buildings according to the type of disease emerged. However, it was observed that hospitals designed as independent units also created difficulties in circulation and services, leading to the emergence of larger-scale hospital plans connecting separate units with enclosed corridors. (Mekteb-i Tıbbiye-i Şahane) Following the establishment of the Republic after the National Struggle, the new-style Gureba and Hamidiye Hospitals established in the 19th century from the Ottoman era were developed and renewed to become Numune Hospitals, leading to new architectural syntheses during this period. This process laid the foundation for modern hospital structures capable of providing more effective and contemporary healthcare services by drawing inspiration from darüşşifa, military-planned, and independently designed hospital buildings.

Since the early 19th century, hospitals built in the Ottoman Empire were generally designed in a barracks-like layout and featured a simple facade. While some hospitals were constructed with the involvement of foreign architects, there was an overall synthesis of monumental neoclassical entrances with the general characteristics of Ottoman architecture in their plans and facades. Hamidiye Etfal Hospital holds particular significance. According to a treatise published in 1902, this hospital was inspired by the Kaiser und Kaiserin Friedrich Kinderkrankenhaus in Berlin and designed by drawing upon advanced European experiences. Commissioned by an German architect, its plans were presented to Sultan Abdulhamid II, showcasing a distinct approach compared to other Ottoman hospitals of the time and bearing traces of the German hospital model. Hence, Hamidiye Etfal Hospital exhibits significant German influences, representing an important example of interaction between Ottoman architecture and German hospitals of the era.Regarding Bezmialem Vakıf Gureba Hospital, despite debates suggesting that Architect Kemaleddin Bey drew inspiration from Riksdorf Hospital in Berlin, the hospital was built in a national style, continuing the tradition of Ottoman hospital layouts. Additionally, Mekteb-i Tıbbiye-i Şahane Hospital, designed by Italian-born architect Raimondo D'Aronco under the supervision of Dr. Rieder Pasha, adhered to the national style despite being designed by a foreign architect and remained faithful to traditional Ottoman hospital layouts.

Table 6. *Development of Hospital Plans from Seljuk Darüşşifas to the Late Ottoman Period*

					
Seljuk Darüşşifa	Ottoman Darüşşifa	Military Hospital	Gureba Hospital	Hamidiye Hospital	20th Century Hospital

In summary, the heritage from the Anatolian Seljuks was preserved through Ottoman Darüşşifas. Reforms during the reigns of III. Selim and II. Mahmud led to significant changes in healthcare structures and the establishment of military hospitals. Subsequently, hospitals evolved to meet contemporary needs, incorporating lessons learned from past experiences. This legacy, coupled with the demands of the period, led to further innovations in healthcare following the establishment of the Republic of Türkiye. The architecture of healthcare structures during the Atatürk era reflects these lessons and a quest for more suitable and effective solutions for future healthcare services. The foundations laid by Ottoman-era healthcare structures were crucial in the development of modern hospital buildings during the Republican era, contributing significantly to the advancement of Türkiye's healthcare sector.

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PART B: ART, HUMANITIES, DESIGN AND PLANNING

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Conservation and Restoration of Historic Buildings: Application of Contemporary Addition Construction Techniques in the Case of Turkey

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Abstract

Historical buildings are important heritages reflecting the cultural identity and aesthetic values of societies. The conservation and restoration of these structures requires the integration of modern technologies as well as traditional methods. The aim of the study is to examine the process and results of the application of documentation and techniques used on selected buildings. The buildings considered within the scope of the study include Süleymaniye Mosque in Istanbul, Edirnekapı Mihrimah Sultan Mosque, Sultan Suyu Fountain in Konya, Sahabiye Madrasah in Kayseri and Payas Sokullu Mehmet Pasha Complex in Hatay. In the Süleymaniye Mosque, digital modelling and analysis was carried out with reverse structural engineering, and in the Mihrimah Sultan Mosque, the durability of wooden structures was increased with carbon fibre reinforced polymers (CFRP). Three-dimensional modelling was carried out with photogrammetry techniques at Sultan Suyu Fountain, and three-dimensional scanning and modelling techniques were used at Sahabiye Madrasah to digitise the structure. In Payas Sokullu Mehmet Pasha Complex, cracks between stone and marble blocks were filled with micro sandblasting technique. The advantages and evaluation of these techniques when applied correctly are also emphasised. The use of modern additional construction methods and documentation techniques in the conservation of historical buildings ensures that these buildings are carried to the future in a safe and aesthetically satisfying way.The safe transfer of these structures to the future will shed light on the next generations to obtain more detailed information about the present and the past.

1. INTRODUCTION

Historical buildings are important objects that reflect the past, cultural identity and aesthetic values of a society. In addition to being of great architectural and engineering value, these buildings are valuable heritages in terms of recognising societies, settlements and cultures and transferring them to future generations. The conservation and restoration of these structures has not been limited to the methods used in the past due to the lack of access to the materials of the past and the time and cost loss of applying the methods of the past. Today, all the possibilities of modern technology and construction techniques are tried to be integrated into these buildings in order to preserve the historical buildings inherited from the past. Contemporary extension techniques ensure both the preservation of historic buildings and their adaptation to today's living conditions [1-2]. These methods not only preserve the original texture and aesthetic value of the building, but also extend its lifespan by increasing its structural durability [3-4].

The restoration of historic buildings is of great importance not only for aesthetic reasons but also for the functionality and safety of the building [5]. In terms of aesthetics, a building should reflect its originality and the conditions of the period in which it was built. However, since the buildings are weakening statically day by day, these weaknesses should be eliminated without delay. The beginning of the conservation of buildings, both aesthetically and statically, dates back to the early 19th century [6]. Since then, the principles of conservation have been systematised, developed and spread across the world in an organised manner. Modern techniques used in the conservation and restoration of historic buildings have

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become more effective with the integration of modern engineering and architectural practices [7]. Developing technology brings innovations to the field of restoration every day; these innovations are more effective in terms of cost and ease of application compared to the technologies of the past. However, rather than cost and ease of application, the restoration and conservation processes have made it easier to preserve the cultural and historical values of historical buildings and to carry these buildings to the future [8].

The basic principles adopted in restoration and conservation processes have been determined within the framework of international standards and guidelines. These principles aim to increase the effectiveness of the methods used in the conservation and restoration of historical buildings [9]. In the restoration process, taking care to protect the historical and cultural values of the building is critical for the successful realisation of the restoration [1].

In restoration works, it is essential to respect the original structure and provide protection with as little intervention as possible [10]. However, internal and external factors such as damages occurring over time, material deformations, natural disasters may jeopardise the safety of the structure. Under such circumstances, repairs restricted to restoring the building to its original state might not be adequate. One way to get around this annoying process is to use modern additional construction techniques. Modern addition construction techniques strengthen the structure and aid in maintaining its distinctive beauty and historical significance [11–13]. The innovations applied during the restoration process preserve the historical and cultural identity of the building and increase its physical stability. As a result, it is ensured that it is carried to the present day while preserving its historical significance and appearance. The restoration procedure guarantees the safe and visual preservation of the historic building. In addition, the modern methods used allow the process to proceed quickly and effectively [14].

The additional construction methods used provide different perspectives and application methods to continuous self-renewal and renovation works with the development of technology. These modern methods used in the restoration of historical buildings allow the current condition of the building to be analysed in detail, as well as ensuring that the necessary interventions are made in the most appropriate way [15]. When applied correctly, it virtually guarantees the building's lifespan and provides significant advantages for the restoration process [16–18].

Five significant historical Turkish buildings—the Payas Sokullu Mehmet Pasha Complex in Hatay, the Sultan Suyu Fountain in Konya, the Mihrimah Sultan Mosque in Edirnekapı, the Sahabiye Madrasah in Kayseri, and the Süleymaniye Mosque in Istanbul—will be the subject of this study's examination of the application of contemporary addition construction techniques.

The main purpose of the study is to investigate the methods of use of contemporary additional construction techniques used in the restoration of important historical buildings in Turkey. Their effects on structural conservation were analysed. The research is addressed in four main areas. How to proceed in future restoration works, the use of existing technology and how to improve the restoration processes are addressed. The role of contemporary extension techniques in the conservation of historic buildings is emphasised, while demonstrating the practical and effective aspects of these techniques. This will make it easier to guarantee the safe and aesthetic transfer of cultural heritage for future generations. The modern techniques used in the restoration of the studied buildings will serve as a template for future work aimed at the preservation and transmission of these historic buildings to future generations.

2. METHOD

This research looks into preserving five important historic buildings in Turkey while also utilizing contemporary building techniques. Hatay Payas Sokullu Mehmet Pasha Complex, Kayseri Sahabiye Madrasah, Konya Sultan Suyu Fountain, Istanbul Süleymaniye Mosque, and Edirnekapı Mihrimah Sultan Mosque are among the chosen structures that fall under the purview of this study. These structures were chosen because they are some of the last surviving examples in Turkey. A survey of the literature that concentrated on contemporary construction methods also influenced the choice. In the literature review,

the selected techniques and documentation methods and their reflections on historical buildings were extensively investigated. As a result of this research, relevant documentation and construction techniques were matched with a small number of buildings. On the matched buildings, the selection was made according to their regional and national value.

A total of four actions were involved in the procedure: 1. Review of Literature: An extensive study was carried out on both modern and traditional approaches to historic building restoration. The method involved gathering information from books, reports, academic journals, among other sources that provided valuable data related to the topic. 2. Case Analysis: Five historical buildings underwent a detailed case analysis where every aspect of the restoration technique was critically looked into, particularly how it impacted the structural and aesthetic value of the building. 3. Comparative Analysis: This was done by comparing results from different cases to ascertain benefits and applicability of each technique; this helps determine whether modern construction methods suit preservation of historic structures and their prospective use in future. 4. Conclusion and Recommendations: Drawing from the research results, conclusions and suggestions for upcoming restoration projects are offered. A focus on the significance of modern addition construction methods for historic building conservation and restoration is emphasized.

3. EXAMPLES FROM TURKEY

In this section, the structures of Süleymaniye Mosque in Istanbul, Edirnekapı Mihrimah Sultan Mosque, Sultan Suyu Fountain in Konya, Sahabiye Madrasah in Kayseri, and Payas Sokullu Mehmet Pasha Complex in Hatay are mentioned.

3.1. Süleymaniye Mosque in Istanbul

Süleymaniye Mosque is an Ottoman masterpiece completed in 1557 and built by Mimar Sinan [19]. The mosque is one of the most extreme points of architecture and engineering of the period it was built. However, over time, natural disasters, humidity, air pollution and other environmental factors have caused damage to various parts of the building [20]. Therefore, the restoration of the mosque has become inevitable. This restoration work was carried out by using a combination of various traditional and contemporary methods.

One of the important techniques used in the restoration of the Süleymaniye Mosque is reverse structural engineering. Reverse structural engineering enables the existing condition of the building to be digitally modelled and analysed [21]. In this way, weak points and damaged areas of the structure are identified and necessary interventions are made. Reverse structural engineering allows the restoration process to be carried out more precisely and safely [22]. A safe restoration is the top priority for a building such as Istanbul Süleymaniye Mosque, which is one of the most important building works of its period.

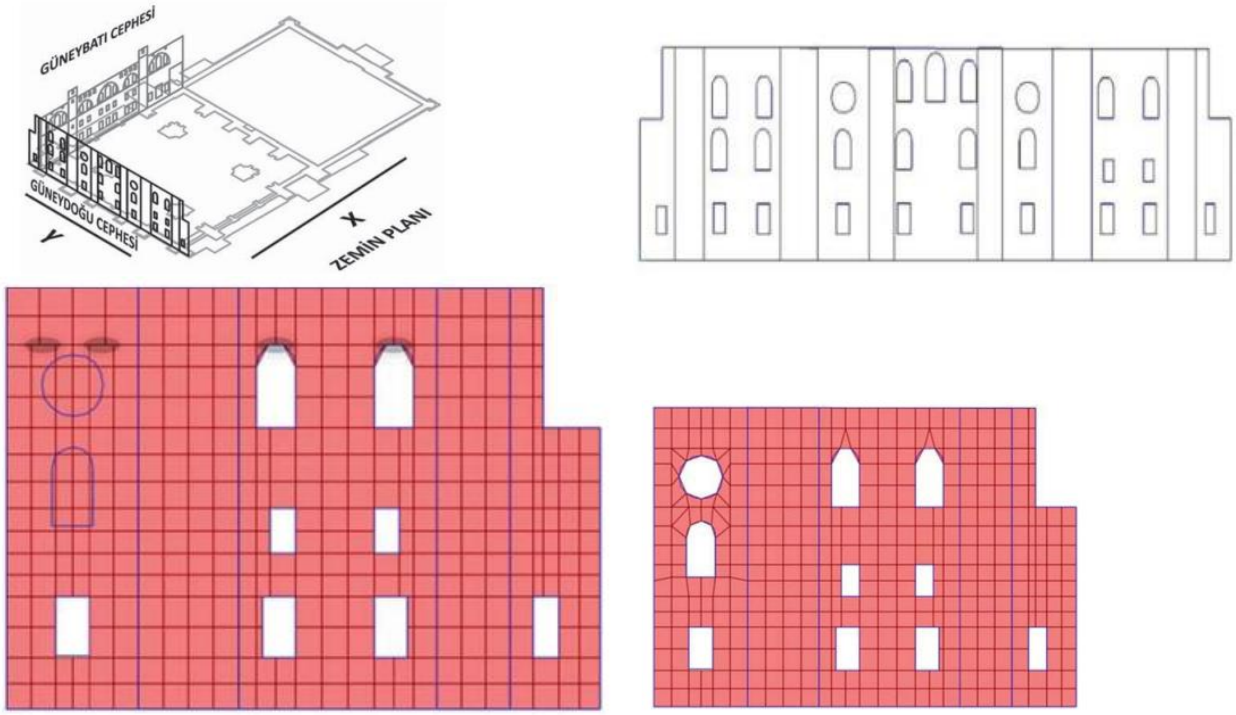


Figure 1. *Istanbul Süleymaniye Mosque two dimensional drawings and damage map prepared with AutoCAD and SAP2000 programmes* [23]

Two-dimensional plan and elevation diagrams of Istanbul Süleymaniye Mosque were initially prepared with AutoCAD and SAP2000 programmes [23]. These two-dimensional drawings were used as a basis for modelling. The study facilitated the transition to three dimensions as well as the planar detection of damaged points.

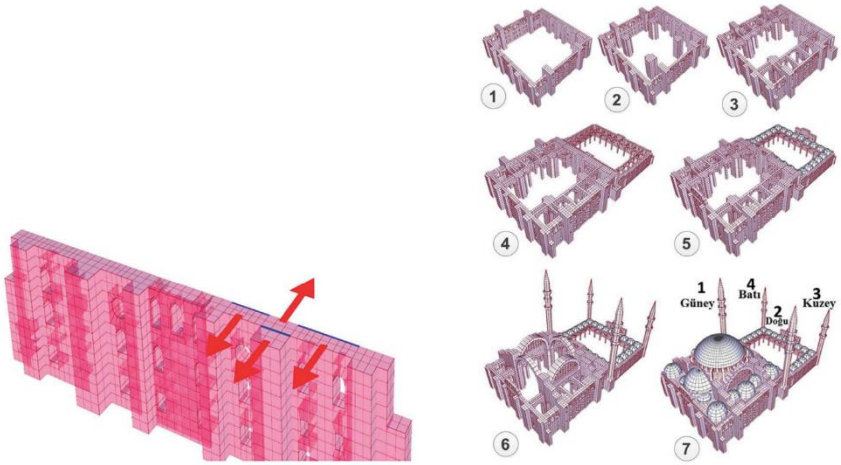
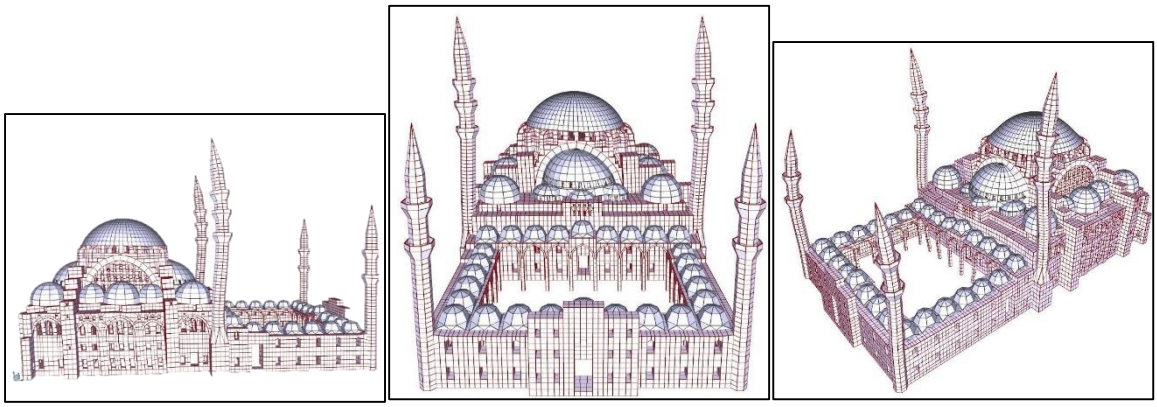


Figure 2. *Stages of solidification of two-dimensional shapes* [23]

After the creation of the two-dimensional shapes and the two-dimensional damage map, the transition from the second dimension to the third dimension was carried out [23]. These procedures are derived to predict which problems two-dimensional damages may cause in the real plane. The gradual realisation of the transition to these three dimensions is more effective than the extraction in a single piece in terms of determining the exact locations where the damage assessment can be performed.



(a) (b) (c)

Figure 3. *Istanbul Süleymaniye Mosque (a) X, (b) Y and (c) Z Axis Torsional Movement Torsion Prediction [23]*

In the last stage, three-way current damage and probable future damage were estimated from the three-dimensional shape [23]. The points that may be problematic in the future were predetermined with the reverse engineering study technique. As a result of the determination, the places that should be given importance in the restoration process were determined. In the intervention stages, this process will be followed from general to specific.

3.2. Edirnekapı Mihrimah Sultan Mosque

Edirnekapı Mihrimah Sultan Mosque, which reflects the elegant details of Ottoman period architecture and the mastery of Mimar Sinan, was built in the 16th century. However, over time, the wooden materials have worn out and jeopardised the integrity of the structure. Modern wood construction techniques and carbon fibre reinforced polymers (CFRP) play an important role in the preservation of such historical buildings [24]. Modern versions of timber construction techniques preserve the original texture of historic timber structures while increasing their durability [25-27]. Due to these features, the method is frequently used in sustainable conservation and restoration studies.

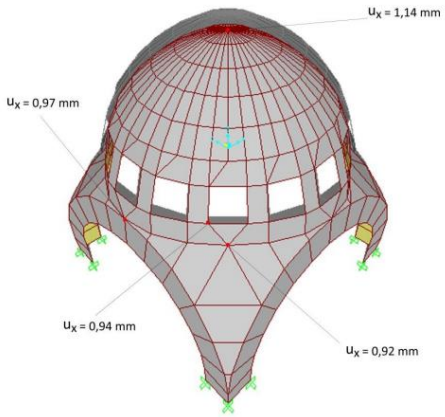


Figure 4. *Edirnekapı Mihrimah Sultan Mosque Dome, Arches And Pendentives As They Are Now And Their Displacement After CFRP Application [28]*

The amount of displacement in the current condition is higher than before the CFRP application and the biggest difference is at the pendentives [28]. Since the CFRP technique uses polymer material, it has increased stability as it reduces the amount of displacement and shrinkage. After the analysis process of the model is carried out, x- and y-directional measures are examined.

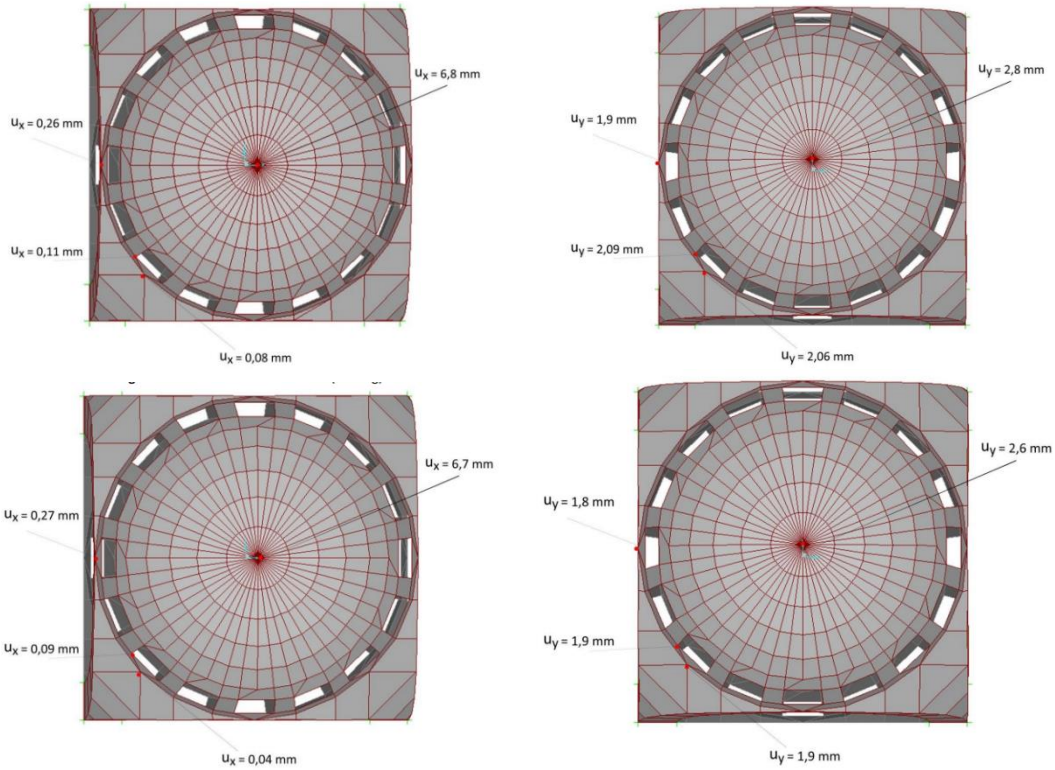


Figure 5. *X- and Y-directional Shifts of Edirnekapı Mihrimah Sultan Mosque Domes, Arches and Pendentives after Existing Conditions and CFRP Application [28]*

As a result of the comparison, a good improvement in x and y direction slip was observed after CFRP application [28]. The reduction of X and Y axis motion showed that CFRP application increased the stability in this analysis. Then the overall tensile and tensile forces are compared on the diagram.

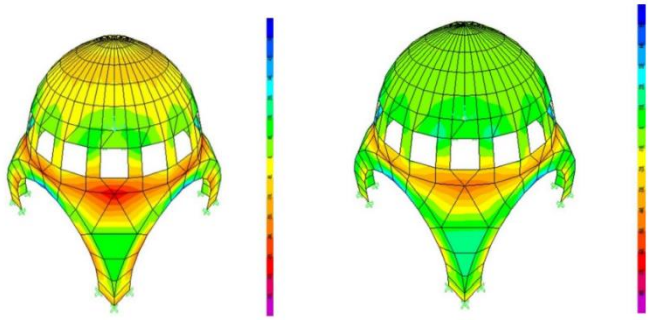


Figure 6. *Existing Condition And Tensile Force After CFRP Application [28]*

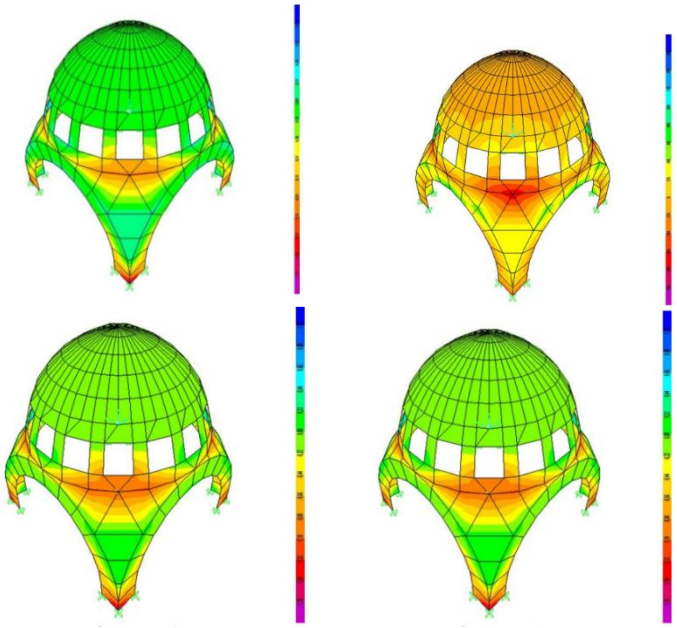


Figure 7. *Current Situation And Draft Forces After CFRP Application [28]*

After CFRP application, the push and pull forces in domes, vaults and pendentives became more stable. With the CFRP work, the building has become more seismically resistant while preserving its historical and aesthetic features [28]. Since the CFRP technique uses polymer material, it can be used more frequently in the repair of historical buildings in places with high earthquake risk, as it provides significant contributions to flexibility and durability properties.

3.3. Sultan Suyu Fountain in Konya

Taşkent Sultan Fountain is located in Taşkent district of Konya and was built during the reign of the Seljuk Sultan Alaeddin Keykubat, after the Sultan liked the quality of the water in this region [29]. The fountain bears the distinctive water structures features of Seljuk architecture. In the process, the structure was damaged by natural and human factors. During the restoration process, a three-dimensional template was created using photogrammetry techniques.

Photogrammetry is a technique used to create three-dimensional models of historical buildings and artefacts. This technique has been effective in precisely documenting and preserving the current condition of the Tashkent Sultan Fountain. Photogrammetry provides ease of application to the field part of the repair work to be carried out by analysing the current condition of historical buildings in a short time [30]. First of all, the necessary technical equipment for the study, namely a camera and an electronic rangefinder device, are identified [31].

Figure 8. *Current Situation And Draft Forces After CFRP Application [31]*

The materials to be used in the photogrammetry method are placed at the required points in certain sequences. Then, enough measurements and photographs of each point are taken to create a point cloud, which is then transferred to the computer environment and combined.

Figure 9. *Point Cloud of Konya Tashkent Sultan Fountain [31]*

With the point cloud extracted, it is easier to examine the current condition of the structure and to make modelling. In addition, with the improvement processes to be carried out on the extracted point clouds, it can also be a source for digital museum application.

3.4. Sahabiye Madrasah in Kayseri

Built in 1267 by the Seljuk vizier Sahip Ata Fahreddin Ali, it is a Seljuk architecture with a rectangular plan, courtyard and portico [32]. Over the years, it has suffered various damages due to climatic conditions, wars and changing country structures. In the light of modern techniques, restoration works were carried out by remaining faithful to the original architecture of the building. One of these techniques used is three-dimensional scanning and modelling technique.

Three Dimensional Scanning and Modelling allows the current condition of the building to be digitally documented and analysed [33]. Three-dimensional scanning allows all the details of the building to be precisely digitised. In this way, interventions to be made during the restoration process can be planned as they should be and reliably [34]. The process and materials of this technique are similar to those of photogrammetry. In the final stage of the process, the results extracted from the three-dimensional point cloud are made more detailed through modeling programs.

(a) (b)

Figure 10. *Kayseri Sahabiye Madrasah (a) 3D Scanning and (b) Model Created from Scanning [35]*

With the scanning process, the holistic state of the building can be seen from a single centre. Afterwards, by going to the plan, section and view from this holistic state to the places, it is possible to go to the special parts of the building that are damaged or damaged and to work on them.

3.5. Payas Sokullu Mehmet Pasha Complex in Hatay

The complex is thought to have been built towards the end of the 16th century of the Ottoman Period and was built by Vizier Sokullu Mehmet Pasha, one of the important statesmen of the period [36]. Until today, it has suffered deterioration due to occupations, natural disasters and especially climatic deformations. Restoration works have been carried out in this direction. In addition to the modern techniques used, micro sandblasting technique was used in certain areas.

Micro sandblasting is a technique that allows the filling of cracks and gaps between the stone and marble blocks of the building. This method is effective in small and sensitive areas and allows repairs to be made without damaging the original material of the building [3]. Micro sandblasting preserved the structural integrity and aesthetic value of Payas Sokullu Mehmet Pasha Complex and ensured its longevity [37].

Figure 11. *Process of Determining the Surface to be Micro Sandblasted [37]*

Suitable places of the structure are investigated for the micro sandblasting technique. During the research, first of all, places where the formation of micro natural organisms is not very intense are selected. After a certain area is selected, a small preliminary application is made. Afterwards, it can be continued after seeing the results of the application.

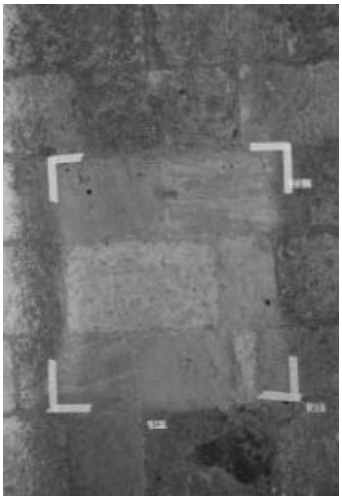


Figure 12. *Hatay Payas Sokullu Mehmet Pasha Complex Micro Sandblasting Technique [37]*

With the sandblasting process, the renovation work was carried out without deteriorating the chemical and physical properties of the building. In this way, the building did not lose its characteristics while returning to its original period shape.

4. ADVANTAGES AND EVALUATION OF MODERN SUPPLEMENTARY CONSTRUCTION TECHNIQUES

Because reverse structural engineering stays true to the original architecture, it makes it possible to restore historic buildings [2]. Through a thorough analysis of the building's current state, this technique makes it possible to make the essential adjustments in the most appropriate way [22]. Furthermore, this method aids in reducing potential hazards while the restoration is underway [21]. Using safe methods with a lower margin of error is one of the most important aspects of historic structure repair.

The application of modern timber construction techniques not only enhances the durability of historic timber structures but also does not compromise their original texture. Carbon fiber-reinforced polymers (CFRP) provide efficient reinforcement for timber constructions while retaining both the structural and visual aspects of the structure, which in turn allows easy adjustment of the building to modern living conditions because of its aesthetic qualities and strength . With such a system in place, there is no likelihood for structural failure or deterioration; refer to collapse as virtually impossible due to this reason.

Photogrammetry is a technique that creates 3D models of ancient edifices and relics. It ensures the preservation of their historical value and visual beauty while accurately documenting their condition—guaranteeing resilience and longevity [34]. Within the digital domain, photogrammetry allows for detailed scrutiny of these age-old constructions [30]. The photogrammetry method's quick application and accurate results help to minimize time lost during the restoration procedure.

An evaluation of the current state of the building can be achieved in a virtual environment through 3D scanning and modeling [34]. This will enable a more accurate and safe restoration process to be undertaken [17] also in future it can be applied for upcoming building maintenance and repair procedures [33]. The use of three-dimensional models helps in visualizing possible structural issues— which guides stakeholders on appropriate intervention strategies [18]. Simulating the procedures to be done to the laptop's structure in advance minimizes cost loss after assessing the deterioration, defects, and weak points of the computer's structure.

Micro-sandblasting can be used to fill cracks and gaps between a structure’s marble and stone blocks [38]. This method ensures the longevity of a building and preserves its structural integrity [3]. By focusing on preserving the original materials of a historic building, micro-sandblasting helps preserve the building’s aesthetic value [39]. By removing outdated structures, the building’s overall value and aesthetic appeal are preserved while also reflecting its grandeur. Modern addition construction techniques and restoration projects significantly improve the sustainability and preservation of historical buildings.

4.1. Suleymaniye Mosque Restoration

Digital modelling and CFRP reinforcement technologies were used in the restoration of the Süleymaniye Mosque to extend its structural life and preserve its important qualities. These techniques were carefully evaluated to ensure that the current condition of the historic building was completed with minimal damage within the scope of the work to be carried out. In particular, computer modelling preserves the historical texture of the building. It also allowed the upcoming maintenance and repair works to be planned more easily and effectively.

4.2. Edirnekapi Mihrimah Sultan Mosque Restoration

Photogrammetry and 3D modelling techniques were used during the restoration of the Kapımihri Mescidi Sultan Mosque in Edirne. These methods enabled the complex geometry of the building to be

comprehensively analysed and reported. They also helped to preserve the historical and architectural elements of the building. These methods are very effective in overcoming the difficulties encountered during the restoration of such complex structures.

4.3. Sultan Suyu Fountain Restoration

3D scanning and modelling technologies were used in the restoration of the Sultan Suyu Fountain. The methods used enabled a comprehensive assessment of the existing condition of the structure. These methods allowed the ancient fountain to be accurately restored without compromising its aesthetic and architectural features without compromising its decorative or architectural features.

4.4. Sahabiye Madrasa Restoration

LiDAR technology was used in the renovation of the Sahabiye Madrasa. The technology used was very effective in mapping the entire building and collecting all the necessary information for the restoration process. LiDAR technology accelerated the restoration process while preserving the historical and artistic aspects of the madrasah.

4.5. Payas Sokullu Mehmet Pasha Complex Restoration

Payas Sokullu Mehmet Pasha Complex was also restored using modern methods. The structural life of the historical building was extended and its artistic and historical importance was preserved. Digital modelling and CFRP reinforcement technologies were preferred within the scope of the restoration work in order to guarantee the long-term stability of the structure.

4.6. General Evaluation of Applied Techniques

The use of digital modelling and CFRP (Carbon Fibre Reinforced Polymer) reinforcement techniques in structural evaluations in restoration works increases the durability of the structure. Carefully examining the current condition of the structure with digital modelling guarantees that the restoration work to be carried out with the least damage and with the best accuracy. Comprehensive documentation is possible with photogrammetry and three-dimensional modelling techniques. This can help to preserve the exquisite subtleties and complex geometric systems of historic buildings. Three-dimensional scanning and modelling technologies are used in studies that require accurate and effective analysis of the current condition of the historic building. These methods help to preserve the structural integrity and aesthetic appeal of historic buildings. LiDAR (Light Detection and Ranging) technology makes it possible to precisely map buildings, making it easier to collect and analyse all the data needed for the restoration process.

Regarding the sustainability and conservation of historic structures, all of these approaches are in line with modern technology. The integration of modern technologies extends the structural durability and aesthetic value of historic buildings, extending their useful lives. This also enables more effective and efficient management of repair operations [40].

5. CONCLUSION

Historical buildings are the reflection of a society towards the past. The conservation and restoration of these buildings is important not only to preserve the integrity of the building, but also to reflect the traces of history in front of our eyes. Within the scope of this study, Istanbul Süleymaniye Mosque, Edirnekapı Mihrimah Sultan Mosque, Konya Sultan Suyu Fountain, Kayseri Sahabiye Madrasah and Hatay Payas Sokullu Mehmet Pasha Complex were analysed. Modern techniques used in the restoration processes of these buildings preserve their aesthetic and historical values, increase their structural durability and extend their service life.

Reverse structural engineering was used in digital modeling and analysis of the Süleymaniye Mosque to identify probable future stress areas in the structure beforehand. In order to fortify and toughen the wooden structures' earthquake resilience, carbon fiber reinforced polymer, or CFRP, was used in the Mihrimah Sultan Mosque through rigorous inspection of the ancient buildings' current condition. Photogrammetry techniques were applied for the current status determination and three-dimensional modelling of Sultan Suyu Fountain. Three-dimensional scanning and modelling techniques were used for the Sahabiye Madrasah. The micro sandblasting technique used to close the gap between the marble and brow blocks was used in Payas Sokullu Mehmet Pasha Complex.

All these contemporary restoration methods enhance the preservation of the historic building. They also provide significant benefits for restoration projects. Reverse structural engineering allows the project to be carried out both more precisely and more safely while identifying the weak points of the historic building. For buildings in seismically active areas, the CFRP method is preferred for both reliability and long-term durability. Photogrammetry allows restoration projects to be carried out quickly and efficiently. This is because it enables historical buildings to be digitally analysed in more detail. According to all these methods, the method that protects the original components of the building without compromising the structural and aesthetic integrity of the building and ensures its longevity is the micro sandblasting method.

As a result of the study, it sheds light on how the old buildings can be best preserved and repaired by using modern technologies. If these strategies and methods are applied correctly, historic buildings can maintain their structural preservation and visual satisfaction for decades. It also provides advantages in terms of speed of installation and cost of repair processes.

From this point of view, it is very important to use more careful and effective restoration methods for cultural treasures. The first step is to determine the weaknesses of the historical building. This step is very important to manage the restoration process of the building in a precise and safe way. As a result, CFRP should be used in high seismicity areas, Photogrammetry should be used in works that need to be fast and efficient, and micro sandblasting methods should be used for structural and aesthetic integrity.

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PART B: ART, HUMANITIES, DESIGN AND PLANNING

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An Analysis of the Urbanization Process from the Republican Period to Present: The Case of Odunluk Neighborhood in Nilüfer District, Bursa Province[1]

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Abstract

Urban areas constantly transforming and it is usually challenging to preserve heritage during transformation. As a historical city that went through a rapid growth period, Bursa sets an example to that. Bursa is an ancient city that hosted various civilizations throughout history. During the Republican Era, Bursa itself grew and expended. Especially starting from the second half of 20th century, Bursa's population increased through migration and the city entered a rapid industrialization era. Built principally on the east-west axis, the city continued to expend mainly towards West. Such growth transformed especially Nilüfer district, situated on the West of the center. Odunluk is a neighborhood in Nilüfer district which transformed during this process. This work focuses on architectural, urban and spatial transformation of Odunluk during the first century of Turkish Republic. The change was analyzed through photographs, satellite images, records and maps of the area. Building density and buildings' architectural properties were seen to have drastically changed. Therefore, Odunluk's transformation was compiled in four main dimensions: materials, building height, density and housing typology. These four critera were determined as the most relevant and basic indicators of change in the area. Having transformed in all four dimensions, Odunluk no longer holds its ancient, rural heritage and it has become a new, central urban zone.

1. INTRODUCTION

Metropolitan zones are dynamic, everchanging areas that constantly go through transformation. In Turkey especially in the 1960s, urban areas went through a rapid change following shift of population from rural zones. Rapid urban growth with partial and insufficient urban plans were problems that the country faced during this period, which lead to urban sprawl in many major cities [1]. Urban sprawl is a multidimensional concept that can be defined through "urban form, land use, its effects on the city and density" [2]. and it is often linked to negative outcomes of urban growth [3]. The way in which a city grows is important for the residents as it transforms urban identity and urban experience [4]. Another issue is the urban heritage, since growth often tends to put cultural heritage at risk [5]. Bursa a city that has a rich historical and cultural heritage, but also went through transformation through growth.

Bursa is an ancient city which hosted several civilizations during centuries. Each of them enriched its multicultural heritage, having left their trace [6]. In historical city center, architectural heritage is mostly protected, especially around the Grand Bazaar and Grand Mosque. This central urban zone, included in UNESCO World Heritage List, remains lively and keeps its economic significance for the city after centuries of use. By time, Bursa expended through east-west axis and new central zones were formed throughout this process.

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Starting from the Republican Era, Bursa developed and expended. Especially after the second half of 20th century, Bursa entered a rapid industrialization era and received domestic migration [7]. These enforced Bursa's expansion on the east-west axis. Following sprawl through west, urbanization and population density increased in Nilüfer district. Migration to Bursa combined with population shift within Bursa accelerated sprawl towards west and densification of Nilüfer. Nilüfer, denser and more crowded than before, transformed into a multi-central urban region itself.

Odunluk, is located in Nilüfer district of Bursa (Figure 1). By expansion and growth of Nilüfer, Odunluk transformed like many other areas inside it. At the beginning of the Republican Era, Odunluk was a rural settlement. As Bursa Metropolitan Municipality was founded Odunluk became a neighborhood in Nilüfer district. Odunluk also became an integral part of the city as it sprawled towards west. As Bursa expanded and Nilüfer grew, Odunluk went through a multi-dimensional transformation, changing several features of the area. By the first century of the Republic, Odunluk is a modernized, central urban zone.

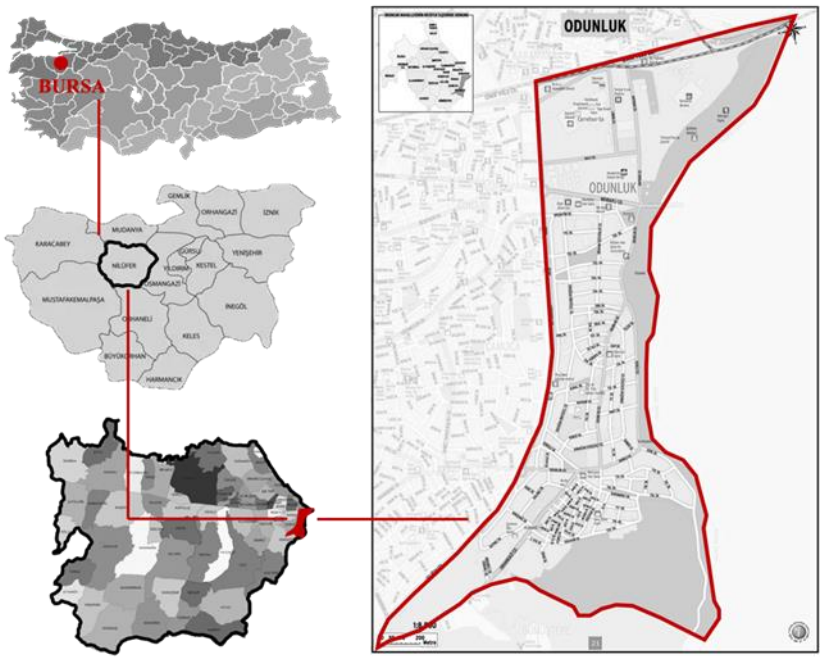

Figure 1. *Location of Bursa, Nilüfer and Odunluk (Prepared by the author)*

In order to study the transformation of Odunluk, four main aspects were taken into consideration. In the past hundred years, Odunluk changed due to urbanization and it transformed from a rural village to an urban center. As land use is a key indicator of urbanization [8], the change in density in the area is studied. Following the increase in building and population density, high-rise buildings became more common in this area by time. Especially after 2010s, Odunluk became a neighborhood where high-rise buildings are densely clustered. Therefore, changes in building heights in the area by time are inspected. Along with that, building materials were studied as new ones came into use for taller and larger buildings rather than traditional ones. Finally, as Odunluk transformed into a denser, more populated urban area; gradually evolving housing typology was studied as particular family houses were replaced by gated communities and high-rise building with urban dwellings.

Odunluk is an example of many settlements that urbanized since 1923. Aim of this work is to analyze urbanization process in Turkey through Odunluk in the past hundred years. The main purpose is to question the ways in which the common architectural practices and applications have evolved throughout the century. The study area was determined as Odunluk neighborhood area, according to 2023 map of Municipality of Nilüfer. Old maps, records, photographs and satellite images are used as materials to study the change of the area. The transformation was evaluated through observing the change regarding four main aspects being building materials, building height, density and housing typology. Studying

Odunluk region at the very beginning of the Republican Era and in the centenary year of the Republic, a clear difference was observed. The region has undergone a multifaceted change.

2. THEORETICAL FRAMEWORK

This section of the work is composed of two parts. First, industrialization and growth of Bursa throughout the past century is briefly explained. Then Odunluk's history and development are studied. Transformation of the area is analyzed and discussed.

2.1. Expansion and Modernization of Bursa

Bursa, located between is Uludağ Mountain and Marmara See, settled on a main east-west axis [9]. By time, it expanded and changed. The modernization process of the city started in the 19th century. After the earthquake and fire of 1854, modernist approaches were applied during the rebuilding of the city. Industrialization of Bursa also dates back to this period, starting with use of machines in silk production which is an important economic activity of the city. In addition to that education, health and hospitality sectors have also developed in this era. By the end of 19th century, city sprawl expanded up to today's Acemler, located on the west of the city center, forming a new luxury residential area [10]. This zone was accessible only by carriages at that time [11]. It is possible to state that, Bursa's sprawl through west initiated in this era. Some photographs of Bursa at the time are seen on Figure 2.

Figure 2. *Bursa, around 1890 [12].*

After World War I, urbanization process of Bursa decelerated. Bursa entered the Republican Era having developed as a result of modernization but still effected by the war. During the early Republican Era, several urban plans for Bursa's development were prepared. The earliest one dates back to 1924 and is attributed to Karl Lörcher. Another plan was prepared by Henri Proust in the 1940s [13]. Finally in the 1960s, Luigi Picciano's plan paved the way for city's sprawl towards west [14].

An important milestone on Bursa's development is the process of industrialization and globalization in the 1960s. Bursa Organized Industrial Zone was founded in 1961, which was a first at that time. This accelerated the industrialization process and attracted a new wave of migration towards Bursa. Another issue that effected Bursa was the population shift from rural zones to large cities, which was a common trend at the time on a national level. As city center became more congested, upper middle class started to leave to settle in Nilüfer on the west. As a result, the westward growth trend of the city which was already expanding on the east-west axis, has accelerated. In the 1990s, globalization starting having its influence on the city. Accordingly, development of Nilüfer district has led to its current state by time [15]. By the 2000s, Nilüfer has become an urban area with many different functions such as commercial areas, service units, recreational areas as well as residential settlements.

Transformation of Bursa can be viewed through residential settlements. By 1980s, globalization and economic development enhanced social segregation. That was one of the reasons that facilitated shift of upper and middle class towards western parts of the city. Nilüfer, located on the west of the city center was the primary zone where this group settled, along with some neighborhoods on north, towards Mudanya. This was also the time when gated communities first appeared in Bursa, as an indicator of

changing social habits [16]. Therefore, it is possible to state that this new type of residential settlements is one of the visible features of Bursa's social and physical transformation at the time.

2.2. Odunluk Region

Odunluk has a rather central location in Bursa. It is located at the outermost part of Nilüfer, right at its border with Osmangazi. Between two historically diverse districts, this zone is also in the middle of Bursa's historical city center and its main industrial zone. Another important aspect of Odunluk's location is the Izmir-Ankara route right on north of it, which is the main axis that Bursa is settled on. On the south, Uludağ sets a natural border. Figure 3 illustrates location of Odunluk.

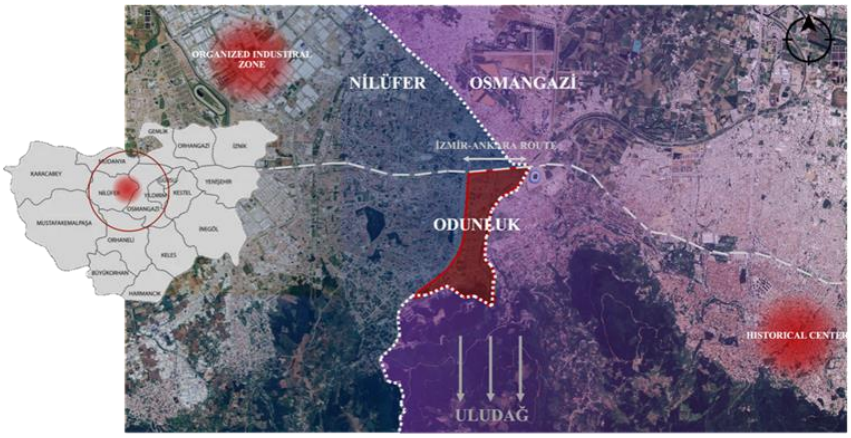

Figure 3. *Location of Odunluk in Bursa (Prepared by the author)*

History of Odunluk as a village dates back to 1890s [17]. The village had received mass migration especially from the Balkans and Caucasia at the beginning of 1900s. Following Ottoman Empire's war losses at the second half of the 1800s, Turkish and muslim populations in the area were encouraged to migrate to Anatolia. Odunluk was one of the designated destinations for them and some of them settled here [18]. Therefore, it is possible to say that in terms of ethnicity, Odunluk has a diverse heritage.

The name Odunluk originates from its ancient use, as it was once the area where woods retrieved from Uludağ were kept before being sent off to central Bursa [19]. Previously, this area was used only for the transfer of firewood to the city to meet Bursa's fuel needs. Residential settlement in this area started mainly after migration following the wars. Especially the Russo-Turkish War facilitated formation of Odunluk village [18]. As people settled, agricultural and livestock farming activities debuted in the area.

During the first years of the Republic, Odunluk remains as it was inherited from the Ottoman Empire. The village is a rural settlement located on the Orhaneli route of this period (Figure 4), completely unattached to the city. Agriculture is the main economic activity of the time in this region. For a brief period, Odunluk becomes a settlement that is administratively attached to Dobruca, a neighborhood nearby, and regains its status as village [12]. After the foundation of Bursa Metropolitan Municipality, Odunluk obtained a status of neighborhood of Nilüfer district and hereupon it remained as it is.

Figure 4. *Odunluk village and ancient Orhaneli route in 1960s [17].*

For the majority of the 20th century, Odunluk has not had a significant growth or transformation. Primary economic activities at the time were pomiculture, grain cultivation and viniculture. The village was parceled perpendicular to the Nilüfer Stream next to it, in order to maximize the efficiency and enable each farmer to water their land [17].

As Bursa expanded towards west by time, Odunluk was affected by the sprawl as well as other areas in Nilüfer. As city sprawled, density of Nilüfer increased in terms of people and buildings. Like many similar regions, Odunluk was no longer an unattached settlement. By time, it became an integral part of the expanding city and its population rose accordingly. Figure 5 illustrates the change in Odunluk's population between 1940 and 2023. Change in population is one aspect of the multi-dimensional transformation of Odunluk.

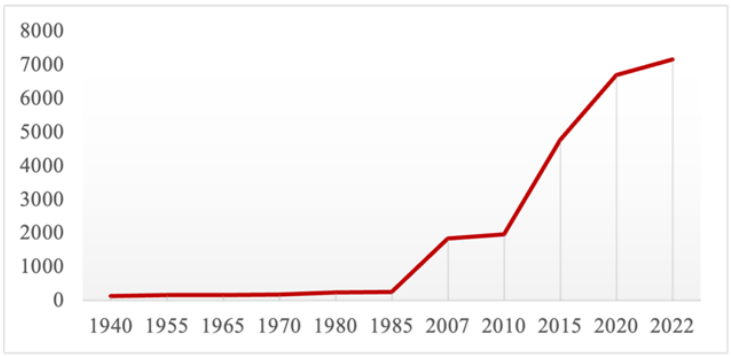

Figure 5. *Population change in Odunluk in years (Data from [17],[20]).*

At the beginning of 21st century, commercial buildings started to settle in Odunluk. Carrefour Mall which was built in 2001, was one of the first ones among them. Commercial settlements accumulated mostly on the northern part of the region, near Izmir-Ankara route. By 2010s, high-rise construction started in this area as well. Meanwhile, gated communities were built and ancient farming lands by the stream which are located in the southern part of Odunluk, transformed into a residential area. Figure 6 summarizes transformation and development of Odunluk on a timeline.

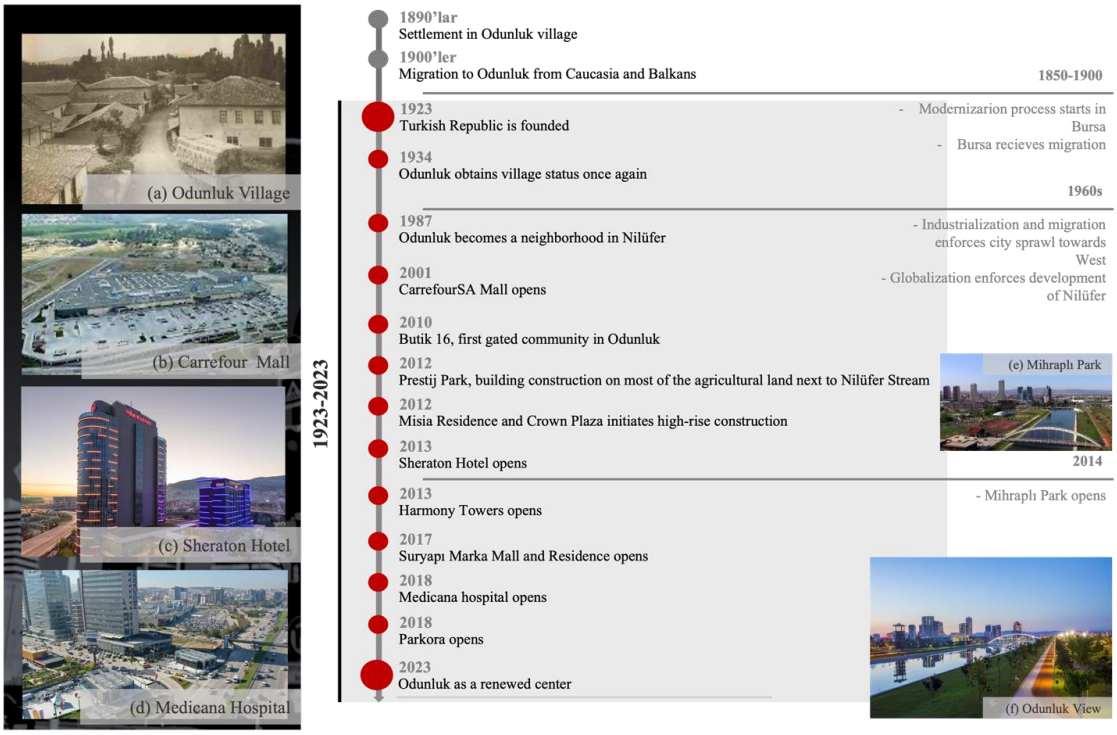

Figure 6. *Timeline of Odunluk's transformation (Prepared by the author, Photos from a: [17], b: [21], c: [22], d: [23], e: [24], f: [25])*

By 2023, Odunluk is a diverse and multi-dimensional urban zone. Figure 7 illustrates various areas with different properties within Odunluk. On the northern part, right by Izmir-Ankara route, mostly commercial buildings are present. Many of them are high-rise buildings, so this part of the neighborhood has a very dense urban structure. Further to south, location of ancient village of Odunluk is situated. This is also the part which is relatively closer to Mihraplı Park. On the extreme south of Odunluk neighborhood, mostly residential areas are found.

Figure 7. *Odunluk in present day (Prepared by the author, Photos from a: [25], b: [26], c: [27], d: [26])*

Northern part of Odunluk is the densest and functionally richest part of the entire neighborhood. Here, many mixed used buildings are present. Malls, hotels, business centers, stores, a hospital, governmental buildings and high-rise gated residences are located here (Figure 8). The area is highly commercialized and due to various functions it has, this part is saturated with high population.

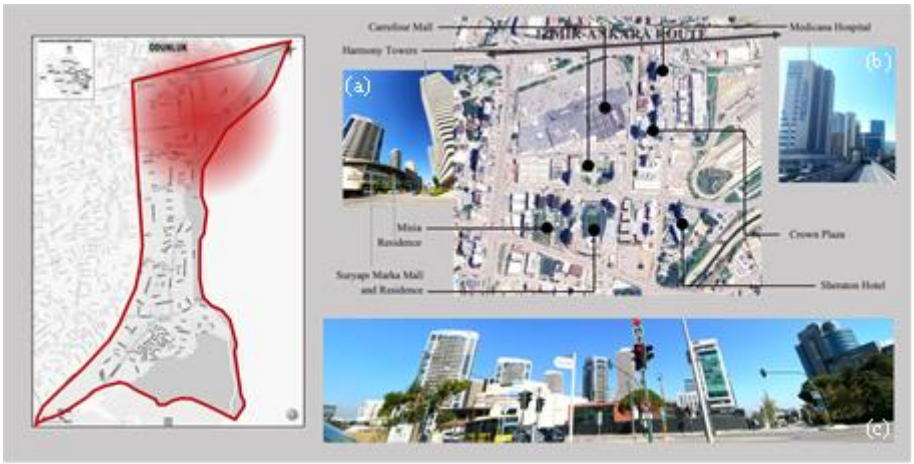

Figure 8. *Commercial building in northern Odunluk (Prepared by the author. Photos from a: [28], b: [28], c:[26])*

3. ANALYSIS OF ODUNLUK'S TRANSFORMATION

In this section, old and new maps, satellite images and photos are used in order to analyze the architectural and urban transformation of Odunluk. Ancient Odunluk village and current Odunluk neighborhood are compared through these materials. Differences in materials, building height, density and housing typology are questioned.

Odunluk's transformation which is connected to Bursa's development is rather recent. As Bursa rapidly expended after industrialization and especially in the 1980s, Nilüfer region and Odunluk started changing. It is possible to state that Odunluk has not significantly changed until 2000s. However, after 2000s, a

rapid transformation is observed in the area. Especially after 2010s, urbanization of the ancient village area and farming lands is accelerated and Odunluk reaches its current form.

Satellite images are one of the most effective ways to observe process of urbanization by time. On Figure 9, satellite images of Odunluk are seen. The most ancient one available is from 1985. It is seen on that image that there has not been a tendency of urbanization during this time and Odunluk is still a rural settlement. The next most ancient image is from 2003, leaving a large time gap between the two. By the 2000s, Odunluk becomes integrated to the expending city. The neighborhood is surrounded by urbanized zones on the east, west and north; as seen on satellite image. As for the first decade of the century, no significant transformation is observed within the neighborhood. However, new settlements in Odunluk are highly visible starting from 2010. On the image of 2015, most of the ancient village's land is seen to be transformed and Mihraplı Park is built. By 2023, a highly urbanized, dense area is visible.

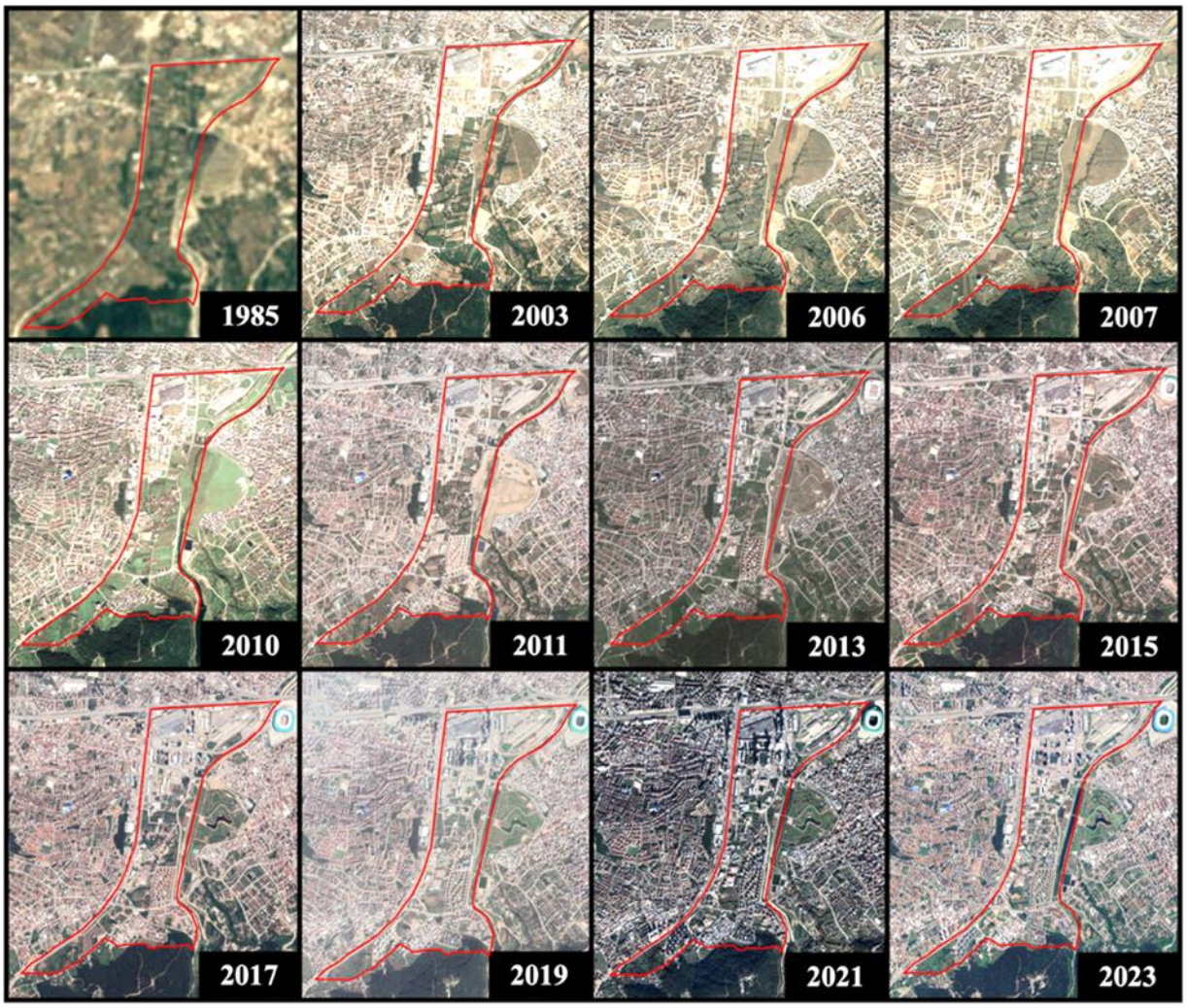

Figure 9. *Satellite images of Odunluk throughout the years (Prepared by the author using Google Earth)*

Maps of Odunluk were also used in order to comprehend the urban development through time. The most ancient map available of Odunluk dates back to 1966. Maps of Odunluk from 1966 and 2023 are shown on Figure 10. In 1966, Odunluk is still a village, lightly populated and separate from the city. The map visualizes only the ancient Odunluk village area. The base map of Odunluk of 2023 on Figure 10 is obtained from Bursa Metropolitan Municipality. On the map of neighborhood of Odunluk, its district lines and present buildings within the area are seen. A scaled version of the map of 1966 is also placed on map of 2023. Difference in sizes of the two maps is highly visible. Odunluk neighborhood of 2023 spreads to a much wider area than Odunluk village of 1960s. Difference of density between the two maps

is also an issue to be addressed. In addition to covering a wider space, Odunluk neighborhood also has a much denser urban character.

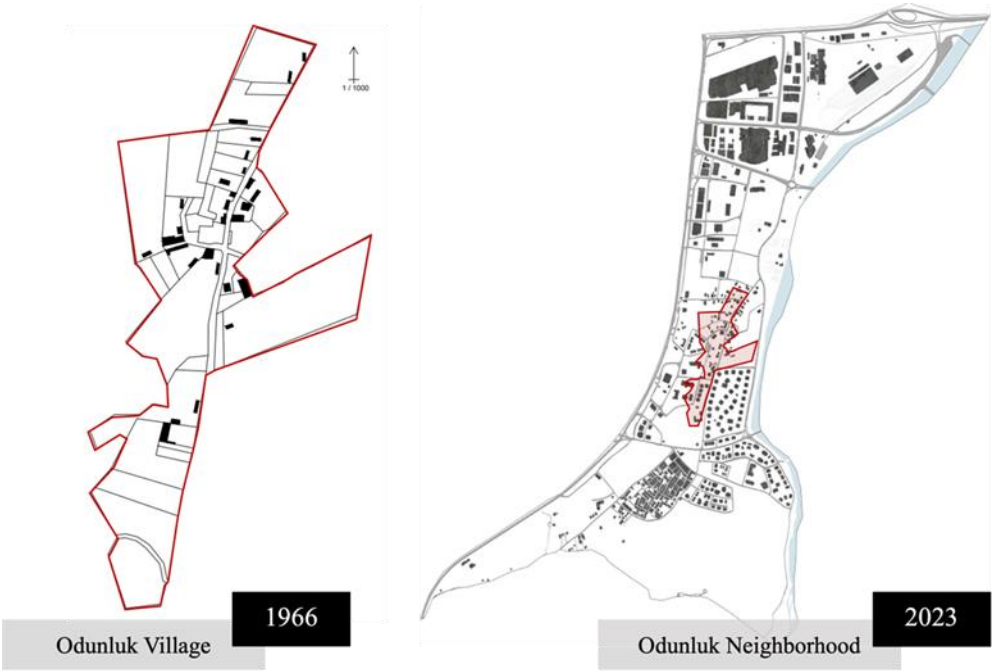

Figure 10. *Maps of Odunluk from 1966 [17] and 2023*

Regarding the ancient Odunluk village area, a multi-dimensional transformation is visible. On Figure 11, two satellite images from 2010 and 2023 are compared. Ancient Orhaneli Route, which used to be the main axis of the village is highlighted in red. The axis is still visible by 2023. However, parceling and density around the axis are among the main changes in the area. In 2010, tracks of the ancient village are still clearly apparent. Farming lands that were parceled perpendicularly to the stream can be seen on the image of 2010. Satellite image of 2010 is the latest one where they are still visible. However, most of those are no longer existent in 2023. Ancient farming lands are mostly replaced by larger parcels of gated communities.

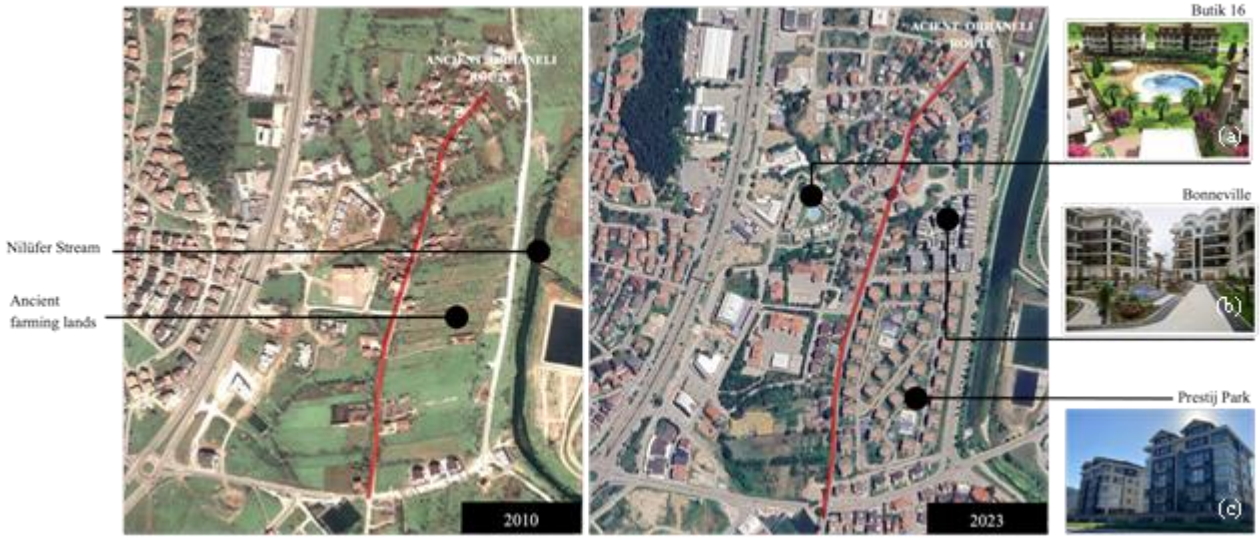

Figure 11. *Ancient Odunluk village area in 2010 and 2023 (Prepared by the author using Google Earth images.and photos from a [29], b [30], c [26])*

An important aspect of the transformation of Odunluk is the main housing typology of the area. As the region transformed in an architectural and urban dimension, common lifestyles and economic activities did as well. This transformation can be observed through main housing typologies. Ancient Odunluk village has a rather simple housing typology. Houses of Odunluk are mainly two-story buildings within their own yards (Figure 12). Building materials used in houses of Odunluk are mainly of stone, wood, bricks and adobe. Each house has its own barn, storage unit, and garden [17].

Figure 12. *Photos of houses in ancient Odunluk village [17].*

On Figure 13, plans of a common two-story house in Odunluk is seen. Ground floor is composed of three main sections: part 1 being kitchen, part 3 a room and part 2 being the main area of circulation with entry and staircase. The top floor follows a similar scheme with two rooms numbered 3 and a main living and circulation area numbered 2.

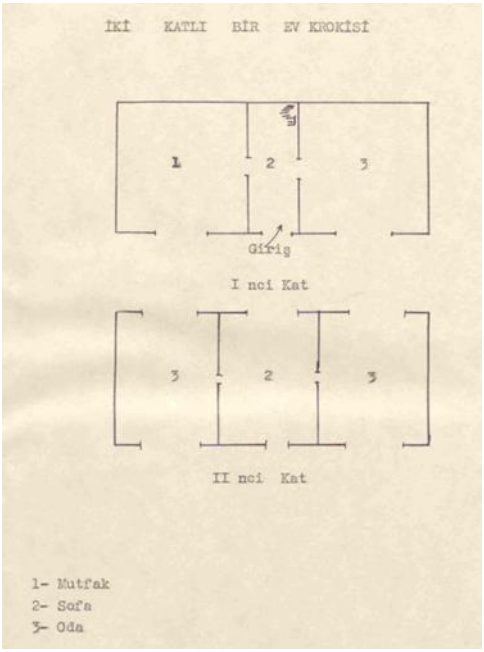

Figure 13. *Plan of a house in ancient Odunluk village [17].*

By 2023, most of these are seen to have disappeared. As seen on satellite images, most of this land is replaced by new buildings and gated communities. On Figure 14, some of the houses that remain by 2023 are seen. While some are still in use as before, one is almost wracked. Yet, housing typology of Odunluk village can still be seen through them. Settlement of traditional two-story houses inside their gardens and their building materials remain slightly visible in Odunluk neighborhood.

Figure 14. *Some remaining houses of ancient Odunluk village [26].*

Despite demolition of many, some buildings of the ancient village remain as they were. On Figure 15, photographs of the same house from different years are seen. This building is a one-story house. First photograph was taken in 1960s and the other one shows the present state of the same building. It sets example as one of the few buildings that remain from the village.

Figure 15. *A house from Odunluk in 1960s [17] and in 2024 [26].*

Apart from few remains, Odunluk neighborhood has a rather different housing typology than Odunluk village. Urbanization and housing typology of Odunluk neighborhood can be studied in two sections. On the north where mostly commercial building are located, housing density is high and mostly located in high-rise buildings. On Figure 16, main residential buildings of the area are seen: Misia Residence, Harmony Towers and Suryapı Marka Residence. On the south, relatively smaller multi-story apartment blocks and gated communities have replaced houses in the ancient village.

Figure 16. *Housing in Odunluk neighborhood [26].*

Overall, housing in present day Odunluk is composed mainly of multi-story apartment buildings. On the northern part, much taller and larger buildings are located. Traditional materials are replaced by use of reinforced concrete. Mixed-use buildings are quite common. On the north, most of the residential blocks are integrated with commercial units. Suryapı Marka Residence is linked to a mall and Harmony Towers have a wide commercial ground floor directly accessible from the street level. At the ancient Odunluk village area, current housing blocks are in forms of either gated communities or single residential units, as seen on Figure 16. Whereas gated communities are strictly separated from outside, most of the single apartment buildings have commercial units on the ground floor.

4. FINDINGS

As urban development of Odunluk is studied, it is possible to state that Odunluk went through a multi-dimensional transformation through time. The earliest satellite image available of Odunluk dates back to 1985. On the image of 1985, it was observed that almost all of Odunluk consisted of green areas, fields and orchards, and that construction was limited to housing and public buildings belonging to the village. But by 2023 a built-up, dense, crowded and sparsely populated neighborhood is seen. The transformation throughout the century is summarized on Table 1.

Table 1. *Odunluk in 1923 and 2023(Prepared by the author)*

Odunluk in the past century

1923	2023
- A village	- A neighborhood
- A rural zone	- A new urban zone
- Separate from the city center	- A new central area
- Economic activities in agriculture	- Economic activities in commerce, trade
- Lightly constructed	and services
- Two-story houses in private lands	- Densely construction
and gardens	- High-rise buildings, gated communities
- Sparsely populated	- High and dense population

Since densification in the Odunluk area had not fully started in the 1980s, the differences between Odunluk of this period and Odunluk of the beginning of the century are limited. From 1923 until the end

of the twentieth century, there was no significant development and new settlement in Odunluk area. The next earliest satellite image is from 2003. In the intervening eighteen years, it is observed that construction started primarily in the areas facing Izmir-Ankara Route in the north of Odunluk. The intensification of construction occurred primarily in the north of the area. Between 2003 and 2010, it is observed that the construction that started in the north of the area moved towards the south. New construction is observed in the ancient village area, around Ancient Orhaneli Route (Figure 17).

Figure 17. *Ancient Orhaneli Route, main axis of Odunluk village, in 2023 [26].*

After 2010, it is seen that the construction in the Odunluk region has increased rapidly. Especially in the ancient village area, most of the construction has appeared in the 2010s. In the light of the information gathered on Odunluk, it is concluded that the construction of Odunluk did not make a significant progress between 1923-1985. Between 1985-2003, construction started in the north and south of the area. The construction in the northern region increased between 2003 and 2010, while there was no significant change in the ancient village area until 2010. From 2011 onwards, the ancient village area of Odunluk started to be built up, and by 2023, many empty spaces in the entire neighborhood have been filled.

Figure 18 shows the built-up areas in the Odunluk region by years. The blurry area marked in red in the center of the figure shows the ancient Odunluk village area. Although some of the buildings belonging to the village have been demolished and the lands belonging to them have been built up, it is seen that some of the old village houses still exist as of 2023. In the colored sections, areas outside the old village area are indicated. These areas show the expansion in the Odunluk region until 2023. In this context, there was no major construction in the Odunluk region until 2003. The biggest development in this period was the construction of the Carrefour Mall, the first large commercial building in the region.

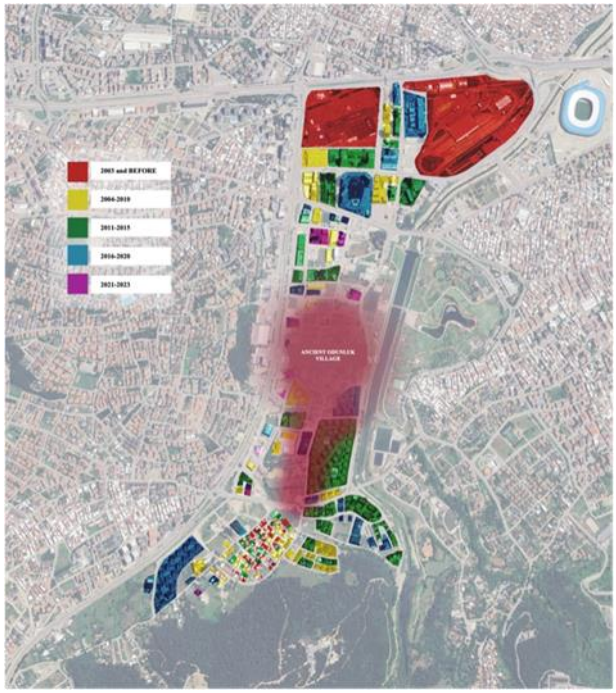

Figure 18. *Urban development in Odunluk region by years (Prepared by the author)*

Throughout the first century of the Republic, Odunluk region is one of the many that evolved. By studying its spatial transformation, it is possible to have a wider opinion of the evolution of architecture in the area. On Table 2, architectural and urban transformation of Odunluk is studied in four main dimensions. Traditional materials such as adobe, wood and stone used in the construction of village houses have been replaced by reinforced concrete. Many high-rise buildings have been constructed in the area. Especially in the northern part where the density is higher, most of the buildings are above 10 floors, with the highest reaching up to 28 floors. At the southern part, it is seen that six to seven story apartment buildings are the majority. There has been a clear densification in the area. Large open lands have been filled by housing developments. Detached village houses have mostly been replaced by apartments. Most of the housing buildings consists of residences or apartments within a complex. Apart from these, there are also single apartment buildings whose ground floor is used as a commercial unit. Along with this, change in lifestyle and economic activities are also visible.

Table 2. *Transformation of architecture and urbanization in Odunluk throughout the years (Prepared by the author. Photos a1, a2, a3, a5, b2, b4, b5, b6, b7, d2, d3, d4, d5, d6 [26], a4 [28], b1, c1, d1 [17], b3 [21], c2, c3, c4 obtained using Google Earth).*

Architecture and urbanization in Odunluk

	Materials	Building height	Density	Housing typology
1923	Stone, wood, bricks and adobe  (a1)	Mostly two-story buildings  (b1)	Broad farming lands and sparsely located construction  (c1)	Detached houses with gardens and similar plan schemes  (d1)
1960s				
2000s	 (a2)	Remaining two-story houses  (b2) Carrefour mall, first major commercial building  (b3)	Remaining broad areas in ancient village zone  (c2)	Remaining houses of ancient village  (d2)  (d3)
2010s	Reinforced concrete in structural systems  (a3) Augmented use of glass walls  (a4)	Mostly residential six-story buildings  (b4)  (b5)	Increasing densification in ancient village area  (c3)	Apartment buildings in gated communities  (d4)  (d5)
2020s	 (a5)	Multi-story and high-rise buildings up to 28 floors  (b6)  (b7)	Dense construction and use of land in entire Odunluk area  (c4)	Apartments in high-rise residences, gated communities and single buildings  (d6)

5. CONCLUSION

Between 1923 and 2023, factors such as urbanization, industrialization and rural-urban migration led to changes in many cities in Turkey. Cities have expanded, became more crowded and densified. This transformation can be observed through Odunluk in Bursa, which itself went through city sprawl and urban transformation. Throughout this work, spatial transformation of Odunluk through urban development and sprawl is studied. The growing city tended to expand towards the west, paving the way for rapid urbanization in Nilüfer. Like many areas in today's Nilüfer district, Odunluk used to be a rural settlement. But over time, it became a zone within the expanding city. However, the region's own rural texture has deteriorated. Traditional building materials were replaced by reinforced concrete, and old village houses and empty spaces were transformed into high-rise apartments and commercial units. Therefore, it is possible to state that the case of Odunluk is an example of loss of heritage through city sprawl. Within a hundred years, Odunluk area has also experienced a tendency towards verticalization, construction and densification. Gaps have been filled with buildings. Odunluk has transformed from a rural area into a new urban center with the change in a hundred years. While the historical city center of Bursa keeps its vitality, Nilüfer and Odunluk region have developed in parallel to this and became a new center. The expansion of the city towards the west continues. Despite this, it is predicted that this new central area, which responds to changing needs, will maintain its functionality in the future, just like the historical center. However, like many areas that have been built up, the original physical and social fabric of the area has been lost and the region has been transformed in every sense.

ACKNOWLEDGEMENTS

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State Duties of Architect Kemaleddin Bey in Archive Documents[1]

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Abstract

Architect Kemaleddin Bey graduated from Hendese-i Mülkiye Mektebi with outstanding success in the last years of the Ottoman Empire, and due to this success, he was sent to Berlin in 1895 with the special permission and encouragement of the state to further his architectural education. During major events such as the Second World War and the War of Independence, Kemaleddin Bey had completed his education and returned home before the establishment of the Republic of Turkey. Starting from the time he studied at Hendese-i Mülkiye Mektebi, the professional experience he gained during his time working in Istanbul and the subsequent education he received abroad made him a sought-after expert in the construction works of the newly established Republic. His successes since the first years of his career and his domestic and international experiences enabled him to be appointed by the state in different fields; During the establishment of the Republic of Turkey after the war, it contributed to the development of the republic with its contemporary building designs in various typologies, restoration practices and management in government offices.

Within the scope of the study, it is aimed to analyse the state assignments of Kemaleddin Bey, who was effective in the structural change of the Republican period, and to examine the roles and projects undertaken by him during the period. Research was conducted by scanning archive data from the last period of the Ottoman Empire to the Republic period and the duties of Kemaleddin Bey were reached. In this context, the Ottoman Archive and the Presidential State Archive, the Republic Archive, Istanbul Technical University Faculty of Engineering Archive, SALT Research Archive and scientific literature were scanned; A chronological data set regarding the professional life of Kemaleddin Bey was created by transcribing the necessary documents into Turkish. The data obtained are classified under various headings such as domestic and international assignments, construction and inspection activities, inspection and assistance assignments, education and training activities including teaching at universities, administrative duties in public institutions, repair and restoration activities, awards and incentives. commission memberships. The variety and scope of the data obtained confirm Kemaleddin Bey's versatile and successful personality and provide information about the general situation of the period. The chronological analysis overlaps in the context of the change in the political and administrative situation during the establishment and shaping of the Republic, and is evaluated and discussed in the narrative of the process in terms of architectural culture.

1. INTRODUCTION

When the architectural history of the Ottoman Empire is examined, it is seen that a change in style in architecture began in the period when Westernization efforts began to dominate. When the 19th century structures are examined, it is seen that they evolved into different lines and designs from Classical Ottoman architecture (Şimşek, 2020). When we look at the architects of the last period of the Ottoman Empire, which was under the influence of Western ideology, it is seen that foreign architects and engineers were active in the field of architecture and construction. It is possible to come across traces of the Balyan family, Alexandre Vallaury, August Jasmund, Leon N. Tarouca, August Jasmund, Leon N. Tarouca and other important architects in various cities of Anatolia, especially in the capital Istanbul. The

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most important reason for the intensive activities of German architects in particular is the cultural, artistic and economic developments within the framework of the strategic cooperation between the Ottoman and German empires during the First World War (Bozkurt). It is known that Martin Elsaesser, Hans Poelzig, Bruno Taut, Paul Bonatz and Herman Jansen came to Istanbul for various reasons. When we look at the prestigious buildings of the period in question, it is possible to come across important buildings of these architects, especially in Istanbul and Ankara. It is understood that Turkish architects were not active in the designs and projects of that period due to the unfavorable economic and political environment .

The nationalism movement that emerged in Europe during this period was also felt in the Ottoman society, and this caused the idea of Turkism to come to the fore. Especially after the declaration of the Second Constitutional Monarchy (1908), one of the changes of the Committee of Union and Progress in the political, social, economic and cultural fields was in the field of architecture and the National Architectural Style emerged (Şimşek, 2020). Vedat Tek, Arif Hikmet Koyunoğlu and Kemaleddin Bey were among the leading architects of this period. Kemaleddin Bey contributed to architecture by serving in different practice and management fields throughout his professional life.

Kemaleddin Bey is one of the most influential architects of the design approach that developed within the framework of Nationalism in the early 20th century. Thanks to the good engineering and architecture education he received at Hendese-i Mülkiye Mektebi, he increased his building knowledge to higher levels. After graduation, he tried to develop his understanding of architecture and improve his knowledge by studying abroad with the advice of his teacher. After returning home, he worked as a manager in government offices and became one of the leading architects of the period, specializing in a wide range of fields from new building design to restoration. Appointment documents available in the public domain show that he was an architect who was particularly requested by the project owners. The buildings he designed, influenced by both the political conjuncture abroad and the political understanding in the Ottoman Empire, are still used today as the first works of the republican period.

2. METHOD

Within the scope of this study, archival research has an important place in methodological terms, shedding light on subsequent analyzes of the subject. Kemaleddin Bey's state appointments were researched by scanning the Presidential State Archives Ottoman Archives, Republic Archives, Istanbul Technical University Faculty of Engineering Archives, SALT Research Archives and scientific literature. Documents related to different branches of architecture and administration were found and divided into domestic and international documents. The documents are classified chronologically according to the subject they relate to. Following the chronological order, the documents sent to different units with different content within the scope of the same project or subject were compiled and the issues related to the period were analyzed.

3. PUBLIC DUTIES OF ARCHITECT KEMALEDDİN BEY IN THE ARCHIVE DOCUMENTS

Kemaleddin Bey's education undoubtedly played an important role in the development of his professional career. He continued to be a successful student from primary school until the end of his university years. Then he carried the same study discipline into his professional career. When the archive documents of different state institutions are scanned, it is seen that Kemaleddin Bey was involved in building projects with different functions, especially in health, education, culture and religion. Darülmuallim, the Dumb and Blind School, and the rooms and laboratories of the Faculty of Medicine [39], the restoration of the Harem-i Şerif and the Gedikpaşa Engineer School project [20] are some of the important projects in his working life. He served as designer, controller and consultant in various phases of the projects. With his government assignments, he gained acclaim as both a good designer and a businessman. As a matter of fact, his outstanding achievements were honoured with the Order of Mecidi in the following period [19].

3.1. Architect Kemaleddin's Life and Architectural Approach

Architect Ahmed Kemaleddin Bey was born in 1870 in the Acıbadem district of Istanbul. He was the only child of Ali Bey, a naval governor in the Ottoman navy, and Sadberk Hanım, a housewife. He started his education at İbrahim Ağa Primary School. After his father was transferred to Crete, he attended a special school for civil servants' children in the city of Suda. After returning to Istanbul with his family in 1881, he attended Şems'ül Maarif Mektebi and completed his high school education in 1884 . After completing his high school education at Numune-i Terakki Mektebi, now known as Istanbul Boys' High School, he started attending Hendese-i Mülkiye Mektebi (Istanbul Technical University) in the second year due to his outstanding success [4]. With this success, even during his school years, Prof. He began working under the supervision of August Jasmund. As a matter of fact, after graduation, he continued to work as Jasmund's assistant and started teaching instead [3]. One of the turning points in Kemaleddin Bey's life was when he was sent to Berlin by the state in 1895 to further his architectural education.

The most influential person in the development of Kemaleddin Bey's architectural approach was architectural design teacher Prof. Although August Jasmund, the political conditions of the Ottoman Empire also had undeniable effects. Kemaleddin Bey, who later started working on Jasmund's Sirkeci Train Station project, used the stylistic features of the station gate in his later works. It is seen that Edirne Train Station, Evkaf-ı Humayun Nezareti building and Istanbul Seraskerat Building bear the traces of Jasmund [5]. During his education, which he started in 1877, he witnessed events such as the declaration of the First Constitutional Monarchy, the Ottoman-Russian War, the dissolution of the Ottoman Parliament, the suppression of the Young Ottoman Revolution, and the Ottoman-Russian War. Public Debt Administration [5]. In those years, with the outbreak of World War I, the political environment became increasingly harsh. The cessation of construction activities after the war allowed Kemaleddin Bey to think about his own understanding of architecture and draw a path [3]. Doğan Hasol [2] states that Kemaleddin Bey benefited from Turkism and Nationalism approaches in his architectural understanding and aimed to reproduce Seljuk-Ottoman elements through western technologies. Yıldırım Yavuz focuses on the reasons behind Kemaleddin Bey's architectural approach and states that this stems from his longing for the power of the Ottoman Empire in the past. He argues that the classical approach, which is no longer suitable for the conditions of the day, should be used only formally and combined with Western architecture.

Since the second half of the 19th century, foreign architects and engineers monopolized the construction activities of the Ottoman Empire. In accordance with the Western historiography style, Sarkis Balyan, Montani Efendi, D'Aronco, Jasmund, Vallaury, Mongeri and Ritter have buildings with different functions, especially in Istanbul [2]. The most important reason for this situation is that in the understanding of the society at that time, architecture-engineering activities were thought to be the monopoly of minorities and the society's interest in civil service. At this point, the understanding started to change with the establishment of the School of Hendese-i Mülkiye. Kemaleddin Bey, one of the graduates of the 3rd term of the school, and the graduates before him were assigned to important levels of the state at that time [6]. In this environment, Kemaleddin Bey made a difference with his professional success and architectural understanding, and gave works and lectures during the critical periods of the Ottoman Empire and the Republic of Turkey.

As of the 20th century, Kemaleddin Bey tried to develop his architectural understanding, and although the Nezareti of Warfare building, Gazi Osman Pasha and Ahmed Cevad Pasha tombs give clues in this regard, he skilfully demonstrated his ideas on this subject with the design of Edirne Station building in 1907 [6]. The building, in which Ottoman motifs are used in different planes and structural elements with a western understanding and innovative engineering solutions, is accepted as one of the pioneering works of the period. Throughout his professional life, he continued this understanding and took part in various building projects in Turkey and abroad with the title of state architect. It can be seen that many state duties of Kemaleddin Bey are recorded in the Presidency State Archive documents, starting from his student years. These documents contain information about the dates, places and subjects of their duties.

3.2. Missions in the Ottoman Empire and the Republic of Türkiye

In the research conducted by selecting the State Archives Presidency Ottoman Archives through the Document Scanning System of the Presidency of the Republic of Turkey, three different titles were scanned: 'Architect Kemaleddin Bey, Kemaleddin Bey, Kemalettin Bey'. As a result of the research, 27 documents were reached in 13 different fund categories. The majority of the available documents are in manuscript form, and it has been determined that the original copies are in the archives of the institution to which they were sent. Abbreviations and descriptions of these documents are systematically displayed in Table 1 for reference and clarity.

Table 1. *Abbreviations of Documents Used*

Abbreviations	
BEO	Sublime Porte Documents Room
DH.ID .	Internal Management
DH.ŞFR .	Ministry of Internal Affairs Password Pen
DH.UMVM .	Directorate of Internal Affairs, Directorate of Local and Provincial Affairs
HH.İ .	Treasured Wills
HR.İM .	Ministry of Foreign Affairs Istanbul Directorate
İ .. TAL.	Will, Compliment
İTÜ.MÜM .	Istanbul Technical University Faculty of Engineering Archive
MB.İ .	Wills for Mabeyn-i Hümayun Documents
MF.ALY .	Department of Education, Ministry of Education
MF.MKT .	Ministry of Education Letter Office
ML.EEM .	Ministry of Finance Real Estate Directorate
PLK.p .	Plan-Project-Sketch

The first document in which Kemaleddin Bey's name is mentioned professionally is dated 3 Kanunisani 1326 (3 January 1908). Kemaleddin Bey is indirectly mentioned in the document found in the Istanbul Technical University Faculty of Engineering Archives. According to the document, it was stated that privately owned lands should be purchased within the framework of the Engineer School plan drawn by Kemaleddin Bey. The last document in which Kemaleddin Bey is included in the professional scope is the document dated 9 June 1923 from the Istanbul Directorate of the Ministry of Foreign Affairs. In the document in question, it is written that the needs regarding the repair of Masjid al-Aqsa are requested.

reveals that Kemaleddin Bey was actively involved in various domestic and foreign issues. The research identified seven foreign and 20 local positions associated with his name. In addition, four documents indirectly referenced to it were also included in the study . Since assignments on similar topics were found in the documents examined within the scope of the Communiqué, it was deemed appropriate to classify the documents according to their subjects. The documents were examined under 4 main headings: construction activities, financial activities, awards, education and training tasks and requests.

3.2.1. Construction Activities

3.2.1.1. Project Management Documents

Since Kemaleddin Bey was one of the few well-educated Turkish architects of his period, the importance given to him by the state officials was also reflected in his duties. After starting his career, he took part in

the design, repair works and construction controls of government buildings. 21 of the 30 documents within the scope of the research are related to construction activities and cover domestic and international assignments. There are 4 main headings in these documents: project manager appointment, project information, project approval and project drawings.

Document-1: Gedikpaşa Engineer School Construction.

Table 2. *Construction of Gedikpaşa Engineer School.*

Love Code	Document Number	File	History
İTÜ.MÜM .	2	20	1326

In the letter written from the Ministry of Commerce, Public Works, to the Director of the Engineering School, Mehmet Refik Bey, it was stated that none of the projects regarding the new school building to be built on the Gedikpasa Theater land were liked; they were neither valued nor deemed worthy of acceptance. For this reason, it was requested that the projects in question be returned to their owners immediately and that an architect be appointed to prepare a new project that includes all kinds of technical equipment suitable for the needs of the school. It was stated that a Scientific Commission should be established to evaluate the project to be submitted by the appointed architect [20].

Figure 1. *Gedikpaşa Engineering School ground floor plan [37].*

Figure 2. *Gedikpaşa Engineering School ground floor plan [38].*

Document-2: Repair of Yenikapı Mevlevi Lodge.

Table 3. *Repair of Yenikapı Mevlevi Lodge.*

Love Code	Document Number	File	History
HH.İ .	202	11	1328

In the content of the document, it was requested that the work to make the burned parts of Yenikapı Mevlevi Lodge usable in case of fire be carried out under the supervision of Kemaleddin Bey. It is stated that the costs of this work will be covered by the treasury [17].

Document-3: Repair of Yenikapı Mevlevi Lodge.

Table 4. *Repair of Yenikapı Mevlevi Lodge.*

Love Code	Document Number	File	History
MB.I ..	141	39	1328

In the document written to the Treasury, it was stated that the condition of the treasury was not suitable for the reconstruction of the burned areas of Yenikapı Mevlevi Lodge. For this reason, it was decided to be satisfied with the repair of only the areas belonging to the dedegan and to transfer this work to Kemaleddin Bey with a committee deemed appropriate by the treasury. It was reported that the bonus would be given to Kemaleddin Bey, and the repair costs would be covered by the property of Emlak-ı Hümayun [25].

Document-4: Construction of Darülmuallimin Mute and Blind School.

Table 5. *Construction of Darülmuallimin School for the Dumb and Blind.*

Love Code	Document Number	File	History
MF.MKT .	1158	57	1328

In the document sent to Kemaleddin Bey from the Ministry of Education, it was stated that he was assigned for the construction of the Darülmuallim, the Dumb and Blind School, and the rooms and laboratories of the Faculty of Medicine, which will be rebuilt. In this context, it is stated that approximately 2% of the plan and tender price will be paid .

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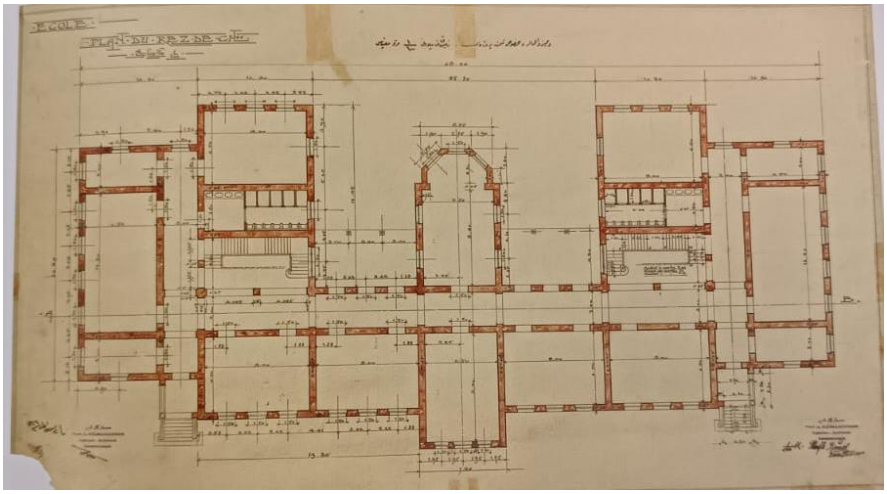

Figure 3. *Ground Floor Plan of the School for the Dumb and Blind [39].*

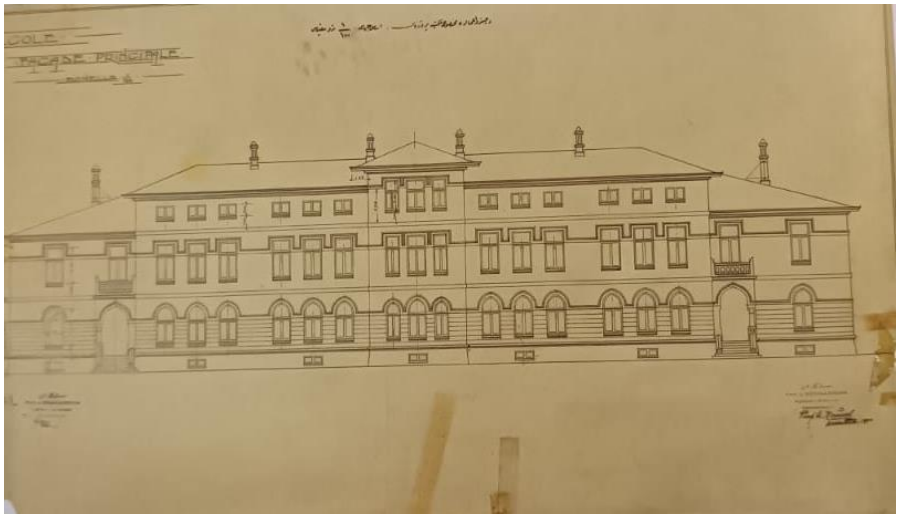

Figure 4. *Drawing of the entrance facade of the School for the Dumb and Blind [40].*

Document-5: Kemaleddin Bey's Mission to Berlin and Rome.

Table 6. *Kemaleddin Bey's Mission to Berlin and Rome.*

Love Code	Document Number	File	History
BEO	3868	290041	1329

Documents written from the Sadaret to the Ministry of Evkaf-ı Hümayun show that Kemaleddin Bey was in Germany to repair the Tomb of Gül Baba in the city of Budin in the Ottoman architectural style. The

Grand Vizierate states that the Ministry of Foreign Affairs wants Kemaleddin Bey to stay in Pest for a day or two to prepare a letter of discovery upon his return. (BEO 1329: 3868.29041.1.1.).

Document-6: Restoration of Sublime Porte.

Table 7. *Restoration of Sublime Porte.*

Love Code	Document Number	File	History
BEO	4155	311577	1331

It is stated that Kemaleddin Bey, the Repair and Construction Manager of Evkaf-ı Hümayun and the Architect of the period, was assigned to repair the burned parts of the Sublime Porte . 10].

Document-7: Turkish-German Friendship Dormitory and Üsküdar-Alemdağ Electric Tram Line.

Table 8. *Turkish-German Friendship Dormitory and Üsküdar-Alemdağ Electric Tram Line.*

Love Code	Document Number	File	History
İTÜ.MÜM .	33	30	1332

In the document sent from the Public Works Inspectorate to the Engineering School Directorate, it was requested that a grant be given to Kemaleddin Bey, who will negotiate for the construction of the Turkish-German Friendship Dormitory and the Üsküdar-Alemdağ Electric Tram Line. two months leave [23].

Document-8: Completion of Hospital Deficiencies.

Table 9. *Completion of Hospital Deficiencies.*

Love Code	Document Number	File	History
DH.UMVM .	118	46	1334

In the response letter sent from the Ministry of Evkaf-ı Hümayun to the Ministry of Internal Affairs, it is stated that the Architect of the Ministry of Evkaf-ı Hümayun, Kemaleddin Bey, and the Sertabi of Nisan Hospital, Nurettin Bey, prepared a joint project to complete the deficiencies of the hospice. It is emphasized that this project information was also conveyed to Sehramanet [16].

Document-9: Allowing the Repair of Harem-i Sharif.

Table 10. *Allowing the Repair of Haram-i Sharif.*

Love Code	Document Number	File	History
İTÜ.MÜM .	54	26	1338

Four years later, it was reported that Kemaleddin Bey, who was invited by the Palestinian Parliament to repair the Harem-i Sharif, was considered on leave and that the architect Vedat was appointed to the courses during his appointment [24].

Document-10: Restoration of Harem-i Sharif.

Table 10. *Restoration of Harem-i Sharif.*

Love Code	Document Number	File	History
BEO	4718	353841	1341

There are two documents regarding this issue: the request of the State of Palestine and the response of the Ottoman State. First of all, in the document coming from the Palestinian Parliament, it was stated that both the durability and internal decorations of Masjid al-Aqsa and Sahratu'l-muhalli Musharraf were unfortunately destroyed. It has been said that repairing this destruction should be seen as an Islamic duty and will be appreciated by the entire Muslim public. While Kemaleddin Bey was appointed as the head of the repair team, antiquities expert Architect Nihat Bey, Engineer Cemal Bey, Sanayi-i Nefise graduate Hüsnü Bey, Hezarfen Tahsin Bey and their sons were also invited to join the team.

In response to this request, in the letter sent from the Grand Vizierate to the Ministry of Foundations, it was requested that the Construction Manager, General Kemaleddin Bey and Engineer Cemal Bey, who were called by the Palestinian Parliament for repairs, be assigned. Harem-i Şerif is considered to be on leave [12].

Figure 5. *Hüsnü Bey, Architect Kemaleddin, Cemal Bey and Mehmet Nihat Nigizberk at the Masjid al-Aqsa restoration office in Jerusalem [7].*

Figure 6. *Drawings of decorations of a building in Jerusalem. In front of the drawings are Cemal Bey, Hüsnü Bey, Mehmet Nihat Nigizberk and Architect Kemaleddin [6].*

3.2.1.2. Project Management Documents

Document-1: Gedikpaşa Engineer School Construction.

Table 11. *Gedikpaşa Engineer School Construction.*

Love Code	Document Number	File	History
İTÜ.MÜM .	5	32	1327

In the document written by the Engineer School, it is stated that the estimated cost accepted in the previous year (1326) for the construction of the reconstructed Engineer School building was 20,000 liras, but the cost of the project approved this year (1327) is 59600-odd liras. It was suggested that the building be constructed in parts, not exceeding the agreed budget. According to this decision, it was decided to build a building with a façade facing Kumkapı Street in the first stage [22].

Document-2: Bursa Government House Exterior and Interior Project Drawings.

Table 12. *Bursa Government Mansion Exterior and Interior Project Drawings.*

Love Code	Document Number	File	History
ML.EEM	885	13	1327

In the document written to the Ministry of Internal Affairs, it was stated that the Bursa Government Mansion, the center of the Hüdavendigar district, was insufficient and became uninhabitable due to its collapse over time. It was stated that 7 million 649 thousand 200 kuruş was allocated for the construction of the Government House, prison and telegraph office. It was requested that the most urgent of these three structures be built with the least expense. Since there was no architect in the institution, the architect assigned by Dersaadet was asked to make drawings and surveys. Kemaleddin Bey, who was assigned during the project process, had a list of areas related to the Government House in question and detailed sheets of the interior and exterior facades [32].

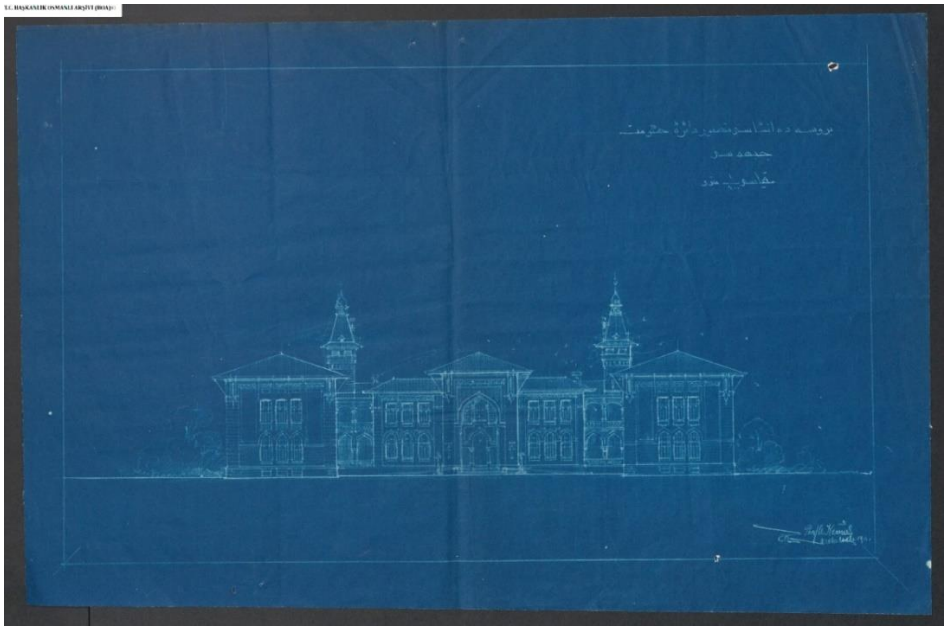

Figure 7. *Facade drawing [33].*

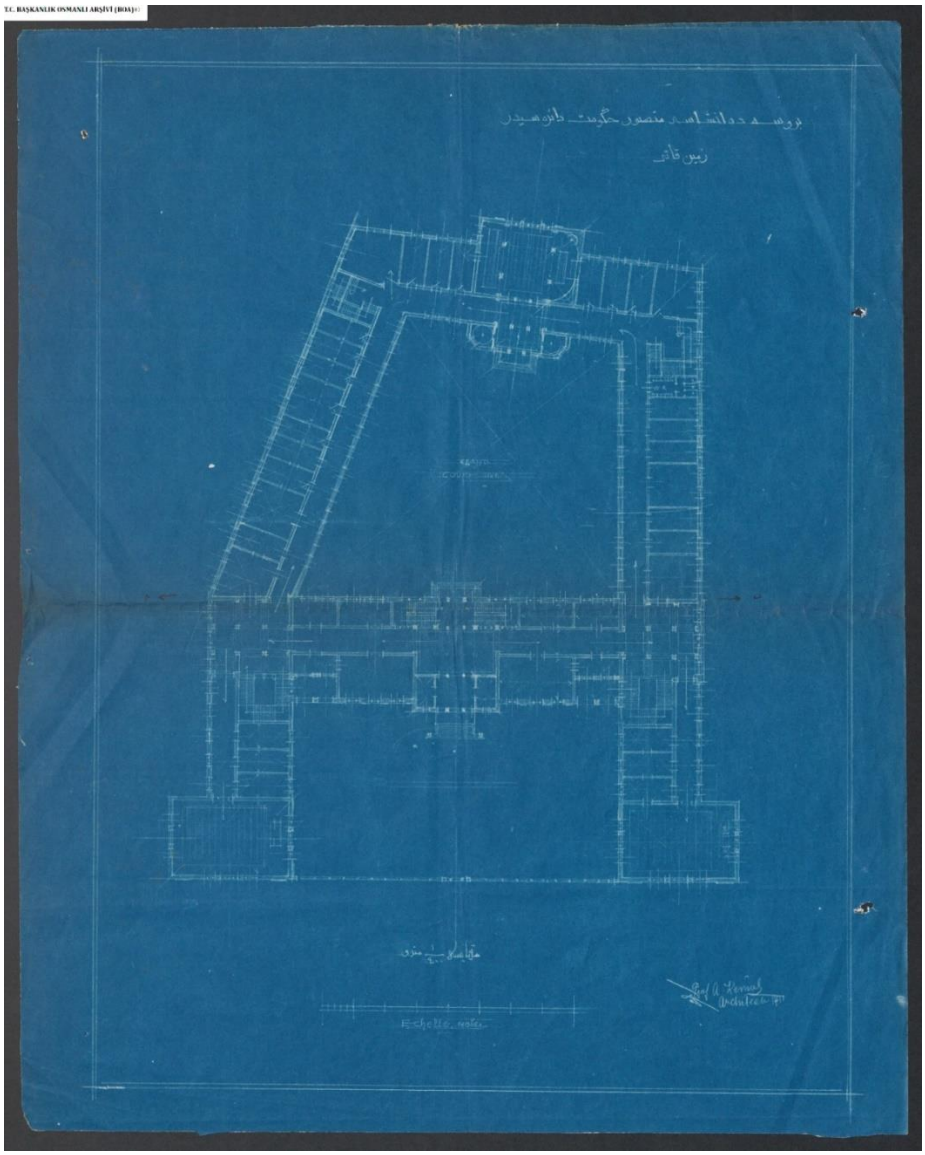

Figure 8. *Plan drawing [34].*

Document-3: Kemaleddin Bey's Sending to Europe for the Electric Tram Line Tender

Table 13. *Kemaleddin Bey's Sending to Europe for the Electric Tram Line Tender*

Love Code	Document Number	File	History
MF.ALY .	59	93	1332

to Europe for the Üsküdar-Alemdağ Electric Tram Line Car tender . He was informed that he would be considered on leave because he could not attend classes at Sanayi-i Nefise Mektebi during his stay in Europe [27].

Document-4: International Library and Industry Museum Exhibition-Commission Establishment.

Table 14. *International Books and Industry-i Musavvere Exhibition-Commission Establishment.*

Love Code	Document Number	File	History
MF.ALY .	63	22	1335

The document written from the Humayun Museum to the Ministry of Education is about the International Book and Industrial Museum Exhibition to be held in 1914 under the auspices of the King of Saxony. For the exhibition to be held in Leipzig in May 1914. It was planned to form a commission under the chairmanship of Mahmud Bey, one of the directors of the Inspectorate Branch, Halil Bey, the Director of the Humayun Museum, Ahmed İhsan, the Director of the Sixth Municipal Department, and Kemaleddin Bey, the Head of the Department. İsmail Hakkı Bey, deputy director of the Foundations of the Humayun Committee of Science, Darülmuallimin, and Monsieur Morgan, retired from the German Consulate General. In the correspondence, it was decided to create a selection of manuscripts and printed books approved by the Grand Vizierate and to transport these works to Germany by train [28].

Document-5: Germany Assignment.

Table 15. *Germany Assignment.*

Love Code	Document Number	File	History
MF.ALY .	98	22	1335

In the document regarding the appointment to Germany, it was stated that the necessary arrangements for Kemaleddin Bey, one of the teachers of the Fine Arts School who was allowed to go, were notified to the Imperial Museum Directorate. He went to Germany with the officer [29].

3.2.1.3. Project Approval Documents

Document-1: School Building Project Approval.

Table 16. *School Building Project Approval.*

Love Code	Document Number	File	History
ITU.MÜM	4	18	1326

In the project approval documents, it was stated that the reconstructed school building project was transferred to Kemaleddin Bey and the project prepared by him was examined and approved by the Evolution Committee and the commission [21].

3.2.1.3. Project Drawing Pages

Document-1: Bab-ı Seraskeri Building Project.

Table 17. *Bab-ı Seraskeri Building Project.*

Love Code	Document Number	File	History
PLK.p .	-	1032	-

The elevation drawing obtained from the undated Project Sheets belongs to the newly planned Bab-ı Seraskeri building [35].

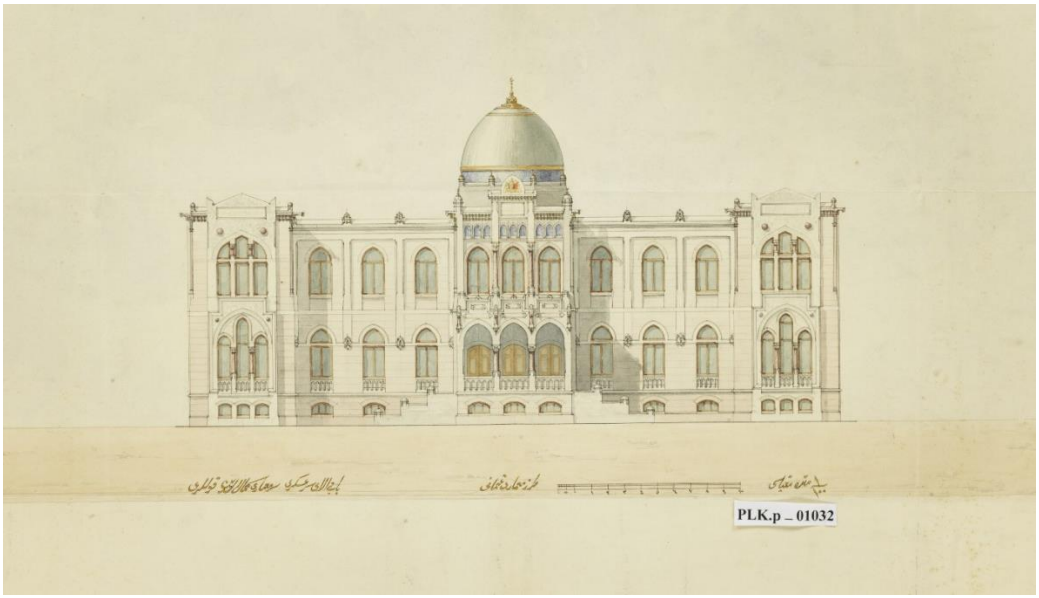

Figure 9. *Bab-ı Seraskeri Building.*

Document-2: Hospital Plan.

Table 18. *Hospital Plan.*

Love Code	Document Number	File	History
PLK.p .	-	4606	-

No information could be found about the location and date of the hospital plan, where the neighborhood names are written in French. It is understood from the existing plans that it was designed as three floors [36].

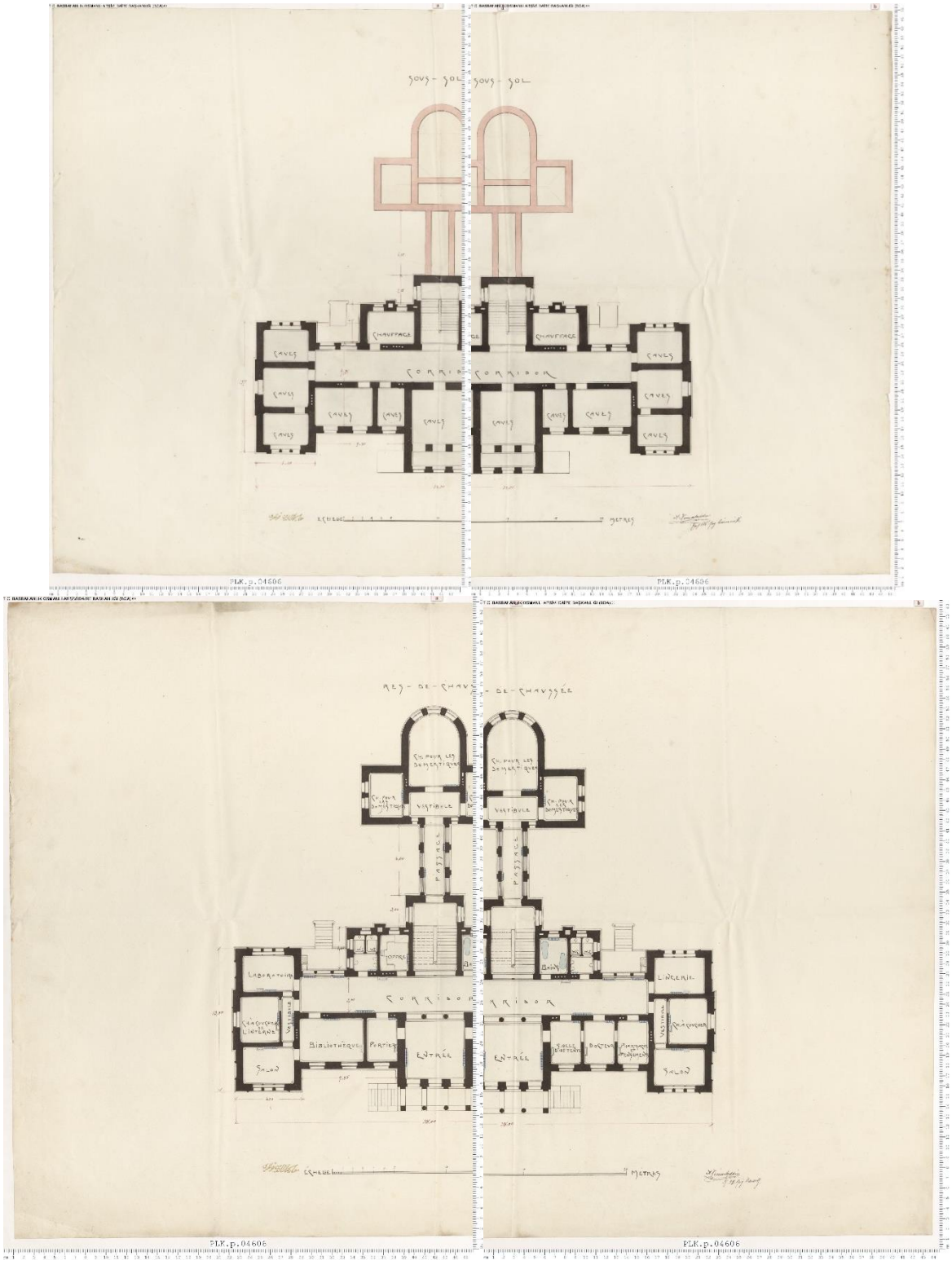

Figure 10. *Hospital Plan.*

When we look at Kemaleddin Bey's duties within the scope of development activities, it is seen that he worked in many different areas and in various structures. Thanks to his education and work experience, he took responsibility in restoration, repair and new building design projects. He also represented the Republic of Turkey by participating in various negotiations during his duties abroad.

3.2.2. Financial Activities

During the investigation, two documents were found regarding the payments Kemaleddin Bey would receive and the sale of land for one of the projects under his control.

Document-1: Beginning of Eyüp High School and Junior High School Construction.

Table 19. *Starting of the construction of the High School and Junior High School in Eyüp.*

Love Code	Document Number	File	History
MB.İ .	143	118	1328

Kemaleddin Bey was asked to prepare the drawings and plans of the High School, higher education school and tomb to be built on the land purchased by the Treasury in Eyüp. It was stated that construction should start within the framework of these plans and the necessary amounts should be paid to the relevant authorities .

Document-2: Darülmuallimin Building Development Plans.

Table 20. *Darülmuallimin Building Construction Plans.*

Love Code	Document Number	File	History
DH.UMVM .	13	52	1336

In the document, it is stated that the deletion, decoration and development plans of the Darülmuallimin building and the government office were made by Kemaleddin Bey. It was stated that 584 liras had to be paid for this service [15].

In the documents examined, the amounts to be paid to Kemaleddin Bey within the scope of financial activities are mentioned.

3.2.3. Rewarding

There are documents showing that Kemaleddin Bey received awards from the state for his professional achievements. Kemaleddin Bey, Sultan II. He was deemed worthy of the Mecidi Order, which started to be awarded during the reign of Abdulmecid and was given to members of science and military science for their outstanding services and achievements between 1851 and 1922.

Document-1: Mecidi Order (Mecidi Order)

Table 21. *Medjidi Order (Mecidi Order)*

Love Code	Document Number	File	History
I .. TAL.	492	6	1332

In the letter written to the Sadaret from the Ministry of Foundations, it was stated that Hacı Evliya Efendi would be given the 2nd Degree Osman-i Nişanı and Kemaleddin Bey would be given the 2nd Degree Mecid-i Nişanı. good services [19].

3.2.4. Trainer- Appointment Assignments

Although Kemaleddin Bey held many positions in private and public institutions, four documents were found in the archive search. He was sent to Berlin, where he taught as an Ottoman Architect, served as a

consultant in the City Administration Board of Science, and was also the founding president of the Society of Ottoman Architects and Engineers. He served as the Head of the Construction and Repair Department of the Ministry of Foundations.

Document-1: Kemaleddin Bey was sent to Berlin and Rome.

Table 22. *Kemaleddin Bey was sent to Berlin and Rome.*

Love Code	Document Number	File	History
BEO	529	39670	-

In the document written to the Ministry of Commerce and Public Works (related to public works), it is stated that Science Architect and Undersecretary of Construction Ahmed Kemaleddin Efendi will be sent to Berlin for two years and to Rome for one year in order to increase the number of civil servants. information [8].

Document-2: Appointment of Kemaleddin Bey to the Provincial Administration Committee of Technical Consultancy

Table 23. *Kemaleddin Bey's appointment as City Administration Scientific Advisor.*

Love Code	Document Number	File	History
BEO	4325	324217	1333

In the document written by the Grand Vizierate, it was stated that the Ministry's Kemaleddin Bey was appointed as the Consultant of the City Council with a salary of 3000 kuruş. [11].

Document-3: Appointment as an Ottoman Architect Teacher.

Table 24. *Appointment as Mimar-ı Osmani Teacher.*

Love Code	Document Number	File	History
MF.ALY .	139	39	1338

It was reported by the Architecture Course Engineer Monçeri that Terziyan Efendi, who was sent to Europe on leave, would not return. Instead, it was decided to appoint Kemaleddin Bey as Mimar-i Osmani Instructor, on the condition that he would take the responsibility of this course [30].

Document-4: Appointment to the Istanbul Zoning Commission.

Table 25. *Appointment to the Istanbul Zoning Commission.*

Love Code	Document Number	File	History
DH.ID .	218	57	1341

In the document written from the Ministry of Internal Affairs to the Ministry of Foundations, it is stated that the historical and natural areas of Istanbul are deprived of order and development. It was stated that even small cities that are 30-40 years old have developed with excellent maps compared to Istanbul. A contract was signed with a company to prepare and draw a zoning plan in order to foresee the future shape of the city. It was emphasized that schools, streets, theater districts, roads and streets will be decided according to this plan. An advisory committee, including Kemaleddin Bey, was established to guide the company [13].

In the documents examined, it is seen that Kemaleddin Bey was officially assigned to various positions in different institutions. It seems that he is in positions that can directly affect decisions in the responsibilities he assumes. He was deemed worthy of important positions at home and abroad.

3.2.5. Requests

Within the scope of Kemaleddin Bey's duties, on the other hand, there are documents written to the relevant authority regarding material supply, travel status and project information. In the three documents found, Kemaleddin Bey is indirectly mentioned and a request is made to facilitate the relevant matter.

Document-1: Masjid al-Aqsa Construction Requests.

Table 26. *Al-Aqsa Mosque Construction Requests.*

Love Code	Document Number	File	History
HR.İM .	75	60	1923

The telegram sent from the Dersaadet Enforcement Directorate to the Ministry of Foreign Affairs of the Turkish Grand National Assembly includes Kemaleddin Bey's demands regarding the construction of Masjid al-Aqsa. In the document, former MP Saidü'l-Hays Bey from Jerusalem was requested to come to Ankara via Istanbul to negotiate for the workers to be employed in the construction of the Masjid al-Aqsa and the tiles produced. In Kütahya [18].

Document-2: Public Prison Construction.

Table 26. *Public Prison Construction.*

Love Code	Document Number	File	History
DH.MUI .	114	3	1328

In the document, Bakırköy District Governorate was asked to help Kemaleddin Bey to conduct research on the land that was decided to be expropriated for the construction of a public prison and to build barracks [14].

In the two documents examined, it is understood that Kemaleddin Bey conveyed the deficiencies or problems in the projects assigned to him. In this context, direct or indirect solutions to these problems were requested.

3.2.6. Related Documents Index in Task Context

When the letters of duty of Kemaleddin Bey were examined, documents written to different authorities on the same subject were found. These documents are of great importance in terms of monitoring Kemaleddin Bey's professional development and understanding the integrity of his subjects. For this reason, events involving more than one document on the same subject were identified and presented chronologically.

3.2.6.1. Restoration of Al-Aqsa Mosque

Love Code	Document Number	File	History
ITU.MÜM	54	26	1338

It was reported that Kemaleddin Bey, who was assigned to repair the Harem-i Şerif, could not attend

classes and was replaced by Architect Vedat Bey [24].

Love Code	Document Number	File	History
BEO	4718	353841	1341

In the telegram sent from the State of Palestine, the government requested the appointment of Kemaleddin Bey for the repair of Harem-i Sharif [12].

Love Code	Document Number	File	History
HR.İM .	75	60	1923

There are demands to employ workers for the repair of Harem-i Şerif and Kütahya tiles [18].

3.2.6.2. Gedikpaşa Faculty of Engineering

Love Code	Document Number	File	History
İTÜ.MÜM .	2	20	1326

Proposals to reconstruct the engineering school building were not deemed appropriate and therefore the institution was asked to appoint an architect [20].

Love Code	Document Number	File	History
İTÜ.MÜM .	4	18	1326

It was stated that the commission prepared and approved the school project given to Kemaleddin Bey [21].

Love Code	Document Number	File	History
İTÜ.MÜM .	5	32	1327

Since the project costs of the school building were higher than the previous year, the building would be built in parts [22].

3.2.6.3. Yenikapı Mevlevi Lodge

Love Code	Document Number	File	History
HH.İ .	202	11	1328

It was decided to repair the burnt parts of Yenikapı Mevlevi Lodge under the supervision of Kemaleddin Bey [17].

Love Code	Document Number	File	History
MB.İ ..	141	39	1328

It was reported that the budget was not sufficient for the repair of the entire Mevlevihane neighborhood, so only the Dedegan neighborhood would be repaired [25].

3.2.6.4. Construction of Darülmuallimin School for the Dumb and Blind

Love Code	Document Number	File	History
MF.MKT .	1158	57	1328

Kemaleddin Bey was assigned to build the rooms and laboratories of Darülmuallimin, School for the Dumb and Blind, and Faculty of Medicine. In this context, it was stated that the project would receive a 2% fee payment [31].

Love Code	Document Number	File	History
DH.UMVM .	13	52	1336

According to the documents, Kemaleddin Bey made the deletion, decoration and development plans of the Darülmuallimin building and the government office. It was stated that 584 liras should be paid in return [15].

5. RESULTS

Architect Kemaleddin Bey's documents regarding state appointments are the most important evidence of his professional success and his extant works. During periods of political and cultural turmoil, he managed to educate himself and gave importance to being able to practice his profession. He took the initiative to ensure professional organization not only in architecture but also in social context. He has adopted a versatile perspective in his professional life and has taken part in various projects in this context. Although he provided architectural services with his personal office in the early periods of his career, he later became deemed worthy of the duties given by the state and served in important positions. Appointment letters, requests and information on the subject, financial evaluations, appointments and approvals regarding these studies are recorded and can be accessed from archive documents. Within the scope of this paper, the letters of duty of Kemaleddin Bey found in the archive documents are examined and presented.

In the archive documents, the types of projects in which Kemaleddin Bey took part, the departments and positions he worked in, the payments he received for his work, the awards he was deemed worthy of, the appointments he made in the administrative context, project technical drawings, the departments in which he was indirectly mentioned within the scope of the project, his domestic and international technical trips. Within the scope of the documents examined, it is seen that the architect served in seven different positions, including new building project manager, restoration-repair project manager, commission chairman, negotiation committee member in domestic and foreign projects, and academician at the university. and a consultant at the municipality. While he held all these positions in the country, he also served as a negotiation delegation member and restoration project manager abroad. It was determined that he was sent to the cities of Buda, Pest, Jerusalem, Berlin and Rome as part of his foreign duties. He was assigned to Istanbul and Bursa within the scope of his domestic duties.

Since assignment letters are sent to different institutions under different subheadings of a single subject, the main limitation of this study is the document research within the framework of the integrity of the subject. In the documents obtained within the scope of this study, a total of nine documents were identified, four of which were written on the same subject and related to each other. There are two documents regarding the repair of Masjid al-Aqsa, three documents regarding the construction of Gedikpaşa Engineer School, two documents regarding the repair of Yenikapı Mevlevi Lodge and two documents regarding the construction of Darülmuallimin, Mute and Blind School. Sanctions, decisions

and payment information regarding the project process can be followed in the documents examined chronologically.

Kemaleddin Bey, under the identities of architect and statesman, served for both states and pioneered a new architectural movement during the political transition period. He aimed to respond to the needs of the society with modern architectural and engineering solutions. The effects of his designs and decisions developed within the framework of these aims can still be experienced today. It is seen that the decisions taken in the development process of Istanbul's zoning plan and the important structures he designed in the field of transport, such as the inns in the historical peninsula in harmony with the city, are both of high architectural quality and state-society benefit. At this point, Architect Kemaleddin Bey's versatile self-development as an architect plays an important role.

Archival documents have an important place in research on Kemaleddin Bey's life and works. The found documents provide important data in terms of understanding the functioning of the administrative process, the role of the architect, the discussed issues and decisions of the period. Undoubtedly, Kemaleddin Bey's name is mentioned and his duties are mentioned in more written documents than the documents researched within the scope of this study. In future studies, scanning not only domestic but also foreign sources will provide information that will improve the research on this subject.

This article was presented as an oral presentation at the Architect Kemaleddin Bey Symposium, organized by Gazi University Faculty of Architecture Department of Architecture in Ankara between 27-29 December 2023. It constitutes the completed version of the paper titled "State Duties in the Archive Documents of Architect Kemaleddin Bey", the summary of which was published in the symposium summary book.

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PART B: ART, HUMANITIES, DESIGN AND PLANNING

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A Review and Implementation Guide for Basic Cellular Automata Models in Pedestrian Evacuation Simulation

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Abstract

Efficient and safe evacuation of individuals during emergencies is critical to building design and public safety planning. Cellular Automata (CA) models have emerged as a valuable tool for simulating and analyzing pedestrian evacuation dynamics, offering a balance of computational efficiency and the ability to capture complex emergent behavior. This paper comprehensively reviews basic CA models for pedestrian evacuation simulation, exploring their fundamental principles, strengths, limitations, and implementation considerations. We delve into commonly used models like Floor Field Cellular Automata (FFCA) and Social Force Cellular Automata (SFCA), highlighting their unique characteristics, advantages, and potential drawbacks. A practical implementation guide outlines step-by-step procedures for developing and executing CA-based simulations, from defining the virtual environment and establishing behavioral rules to analyzing the simulation output. We emphasize the importance of data-driven approaches for model calibration and validation, ensuring the accuracy and reliability of simulation results. Finally, we discuss future directions for CA-based evacuation modeling, including integrating more sophisticated behavioral rules, developing hybrid models, and exploring three-dimensional simulations to enhance realism and predictive capabilities. This comprehensive review aims to equip researchers, practitioners, and students with the knowledge and tools to effectively utilize CA models for enhancing safety and preparedness in various evacuation scenarios.

1. INTRODUCTION

The ability to safely and efficiently evacuate individuals from buildings and public spaces during emergencies is crucial for minimizing casualties and ensuring public safety [1]. This is particularly critical in spaces with high occupant densities, such as assembly buildings [2] or historical mosques where unique architectural features can pose additional challenges [2–4]. Understanding crowd movement and behavior under these circumstances is paramount for developing effective evacuation plans, optimizing building layouts, and informing emergency response strategies. Pedestrian evacuation modeling is a vital tool in this process, offering a virtual environment to explore different scenarios, pinpoint potential bottlenecks, and guide decision-making for safer crowd management [5,6].

Among the diverse approaches to pedestrian evacuation modeling, Cellular Automata (CA) models have gained prominence due to their inherent advantages. CAs provide a powerful computational framework for simulating complex systems composed of discrete components interacting under simple rules [7,8]. Their inherent simplicity allows for straightforward implementation and high computational efficiency, making them well-suited for simulating large-scale evacuations within reasonable timeframes [9,10] Furthermore, CAs capture emergent behavior, where macroscopic patterns arise from the interplay of microscopic rules, a key characteristic of crowd dynamics.

This paper aims to provide a comprehensive review and implementation guide for basic CA models used in pedestrian evacuation simulation. By exploring the foundational principles of CA modeling, reviewing key model types, and offering practical implementation guidance, we seek to equip researchers,

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practitioners, and students with the knowledge and tools needed to leverage this versatile approach for informed evacuation planning and design.

The paper is structured as follows: Section II presents the core concepts of CA modeling, highlighting its relevance to pedestrian evacuation. Section III delves into a detailed review of common basic CA models, including the Lattice Gas Model, Floor Field Model, and other field-based approaches, discussing their strengths, limitations, and specific applications. Section IV offers a practical implementation guide, outlining a step-by-step process for developing and executing CA-based simulations. Section V explores the strengths and limitations of basic CA models, considering their accuracy, applicability, and potential for improvement. Finally, Section VI concludes the paper, summarizing key findings and suggesting future research directions for advancing the field of CA-based evacuation modeling.

2.FUNDAMENTALS OF CELLULAR AUTOMATA FOR EVACUATION MODELING

Cellular Automata (CA), with their unique ability to simulate complex systems arising from local interactions, have become an invaluable tool for understanding and predicting crowd dynamics during evacuations. Their inherent simplicity, combined with their capacity to capture emergent behavior, allows researchers to model the often-unpredictable nature of pedestrian movement in a computationally efficient manner.

A regular lattice of cells at the heart of a CA model, each representing a discrete unit of space within the simulated environment. These cells, like the pixels of a digital image, are the building blocks of the model, and their states, analogous to the colors of those pixels, represent the condition of that space at a given time. In the context of pedestrian evacuation, a cell's state could denote whether it's occupied by a person, blocked by an obstacle, or vacant and available for movement. This discrete representation mirrors the real-world scenario where individuals move in steps rather than continuously gliding through space.

The evolution of a CA model unfolds over discrete time steps, like frames in a movie, guided by a set of predefined local rules. These rules, akin to the laws of physics governing the motion of objects, dictate how the state of each cell changes based on its current state and the states of its neighboring cells. Similar to a pedestrian's field of vision, the neighborhood defines the set of cells that directly influence a given cell's behavior. Commonly used neighborhoods include the von Neumann neighborhood, comprising the four orthogonally adjacent cells, and the Moore neighborhood, encompassing all eight surrounding cells, including diagonals.

The magic of CA lies in its ability to generate complex global patterns and behaviors from these simple, local interactions. As each cell's state is updated based on its neighborhood, intricate dynamics emerge from the collective behavior of individual cells. This bottom-up approach, where macroscopic phenomena arise from the interplay of microscopic rules, mirrors the self-organization often observed in real-world crowds, where individual decisions and movements give rise to collective patterns like lane formation, bottlenecks, and shockwaves.

Several key features make CA particularly well-suited for simulating pedestrian evacuation. First, their inherent discreteness naturally aligns with the step-by-step movement of pedestrians, avoiding the complexities of continuous motion. Second, the focus on local interactions reflects the reality that pedestrians primarily react to their immediate surroundings - the presence of obstacles, the density of the crowd, and the movement of those nearby. Third, CA models are inherently parallel, meaning that the state of each cell can be updated independently, allowing for efficient computation of large-scale simulations. Finally, their capacity to generate emergent behavior from simple rules makes them ideal for capturing the often-unpredictable dynamics of crowds, where seemingly random individual actions can lead to organized collective patterns.

Developing an effective CA evacuation model involves carefully considering several design choices. The cell size determines the level of detail, with smaller cells providing greater accuracy but demanding more

computational power. The chosen cell states must capture relevant aspects of pedestrian behavior, such as location, direction, speed, and even panic levels. The neighborhood definition dictates the interaction range and model complexity, while the local rules, the heart of the model, need to incorporate factors like obstacle avoidance, desired speed, and herding behavior. Finally, the treatment of boundaries, whether periodic (as in a continuous loop) or open (allowing entry and exit), influences the overall flow dynamics. By carefully crafting these design choices, researchers can build CA models that effectively capture the essential dynamics of pedestrian evacuation, providing valuable insights for optimizing safety and preparedness in various real-world scenarios.

3.REVIEW OF BASIC CELLULAR AUTOMATA MODELS FOR PEDESTRIAN EVACUATION

In the quest to effectively simulate the intricate dynamics of crowd movement during evacuations, researchers have developed a diverse array of CA models. This section delves into a detailed examination of some of the most foundational models, each representing a distinct approach to capturing pedestrian behavior's essential elements and interactions within a confined environment.

3.1 Lattice Gas Model: A Simple First Step

The Lattice Gas Model (LGM), also known as the drift-random walk model, emerged as one of the earliest attempts to apply CA principles to pedestrian dynamics [11]. Imagine a bustling city square, bustling with pedestrians, each moving towards their own destination. The LGM simplifies this scene by representing the square as a grid, where each cell symbolizes the space occupied by a single individual. These individuals, like particles in a gas, move on the grid, each with a preferred direction, often guided by the allure of the nearest exit.

The LGM introduces a "drift probability" (D) that biases the movement of these particles toward their preferred direction. Picture it as a gentle breeze nudging pedestrians towards their goal, influencing their choices at every intersection. At each time step, a particle can step into one of its unoccupied neighboring cells, with the probability of moving in the preferred direction enhanced by this drift. The probabilities of moving in other directions are then evenly distributed among the remaining vacant cells.

This model, while conceptually straightforward and computationally efficient, exhibits limitations in its realism. The simplified movement rules often result in unnatural trajectories, failing to capture the subtle adjustments, hesitations, and avoidance maneuvers characteristic of real pedestrians. Moreover, the LGM struggles to accurately simulate movement within complex environments adorned with obstacles and multiple exits, where a simple drift probability cannot fully represent the intricate decision-making processes of individuals navigating a maze of choices.

Despite its limitations, the LGM has provided valuable insights into fundamental aspects of pedestrian dynamics, such as jamming transitions in counterflow, where two opposing streams of pedestrians impede each other's progress, and the impact of exit configuration on overall evacuation efficiency. It served as a stepping stone, paving the way for more sophisticated models.

3.2.Floor Field Model: Guiding Movement with Virtual Fields

The Floor Field Model (FFM), introduced by Burstedde et al. and further developed by Kirchner & Schadschneider, represents a significant leap forward in CA-based evacuation modeling[9,10]. This model recognizes that pedestrian movement is not solely driven by a simple desire to reach an exit but is influenced by both the static environment and the dynamic presence of other individuals.

Imagine navigating a crowded airport terminal. The FFM captures this scenario by introducing virtual fields that act like invisible forces guiding pedestrians' movements. The Static Floor Field (SFF) embodies the unchanging features of the environment – the beckoning exits, the imposing walls, and the

intricate layout of corridors and obstacles. This field, like a map etched into the floor, guides pedestrians towards exits by assigning higher values to cells closer to those desired destinations.

The Dynamic Floor Field (DFF), on the other hand, represents the ever-changing influence of the crowd itself. As pedestrians move, they leave a subtle "trace" on the DFF, increasing the attractiveness of those recently traversed paths. This trace, like a faint scent lingering in the air, encourages others to follow, capturing the herding behavior often observed in crowd dynamics.

The transition probability for a pedestrian to move to a neighboring cell is then calculated by considering the combined influence of the SFF, the DFF, and additional factors like obstacle avoidance. This intricate interplay of virtual forces leads to more realistic movement patterns, capturing the subtle adjustments, pauses, and detours that characterize pedestrian behavior.

The FFM's ability to handle complex geometries, its flexibility in incorporating diverse factors like individual characteristics and panic, and its increased realism have made it a cornerstone of CA-based evacuation modeling. It has been widely used to simulate evacuations from diverse environments, from single rooms and multi-story buildings to ships and aircraft, providing valuable insights into the impact of exit design, crowd density, and various behavioral factors on evacuation efficiency.

3.3 Other Field-Based Models: Exploring New Dimensions of Influence

Beyond the LGM and FFM, researchers have explored various field-based models to capture the multifaceted influences that shape pedestrian movement. Like specialized lenses, these models provide unique perspectives on crowd dynamics, each emphasizing different aspects of the complex interplay between individuals and their environment.

The Potential Field Model, similar in spirit to the FFM, utilizes a potential field to guide pedestrians towards exits [12]. However, this potential field is not simply based on distance to exits but can incorporate additional factors, such as pedestrian congestion and route capacity, offering a more nuanced representation of path attractiveness.

The Electrostatic-Induced Potential Field Model draws inspiration from the realm of physics, using a virtual potential field analogous to electrostatic interactions to attract or repel pedestrians [13]. Imagine exits emitting a negative charge, drawing pedestrians toward them like magnets, while obstacles and walls emanate a positive charge, repelling individuals and encouraging them to seek alternative paths.
The Cost Potential Field Model takes a more economic approach, introducing the concept of "cost potential" [14]. Each cell is assigned a cost, representing the time, effort, or risk of moving to that location. Pedestrians, like rational agents seeking to minimize their expenses, then make movement decisions based on the cost potential of neighboring cells, balancing the desire to reach an exit with the need to avoid congestion, obstacles, and potential hazards.

These field-based models, each with its unique perspective and level of complexity, offer a rich toolbox for exploring the intricate tapestry of pedestrian evacuation dynamics. The choice of the most appropriate model depends on the specific scenario, the desired level of detail, and the research questions being investigated.

4. IMPLEMENTATION GUIDE FOR BASIC CELLULAR AUTOMATA MODELS

This section provides a practical, step-by-step guide to implementing basic CA models for pedestrian evacuation simulation. We'll delve into the essential considerations for each stage, from setting up the virtual environment to analyzing the simulation output, empowering you to build and execute your own CA-based simulations. While the focus is on general principles applicable across various models, remember that specific implementation details may differ depending on your chosen CA model, programming language, and simulation platform.

Step 1: Defining the Virtual Stage - Building the Evacuation Environment
The first step in creating a CA-based evacuation simulation is to meticulously construct a virtual representation of the physical space where the evacuation will unfold. This digital environment serves as the stage for your simulated crowd, dictating their movement possibilities and influencing their behavior.

- **Grid Creation:** Begin by dividing the evacuation space into a grid of cells, the fundamental building blocks of your CA model. Carefully consider the appropriate cell size, striking a balance between the desired level of detail and computational efficiency. Smaller cells offer a more precise representation of the environment but demand greater processing power. The typical choice is to let each cell represent the space occupied by a single person, approximately 40cm x 40cm [10].

- **Populating the Grid:** Transform your architectural plans into a digital reality by populating the grid with the essential elements of your chosen environment. Mark the cells representing walls, obstacles (furniture, columns, etc.), and other immovable features that will constrain pedestrian movement. Clearly define the boundaries of the space, preventing agents from venturing outside the designated area.

- **Exit Placement:** Carefully position the exits, the ultimate destinations for your simulated crowd. The number, size, and location of exits are crucial in shaping evacuation dynamics and influencing the overall evacuation time.

Step 2: Setting the Scene - Initializing the Crowd and Their Characteristics

With the virtual environment in place, it's time to populate it with your digital crowd. Each agent in your simulation represents a single individual, carrying a set of characteristics and behaviors that will shape their movement decisions.

- **Agent Placement:** Distribute agents within the grid, either randomly or based on specific initial conditions. For example, if you're simulating a lecture hall, you might position agents in rows to mimic a seated audience. For a train station, you might distribute agents more randomly to reflect the natural flow of people.

- **Assigning Initial States:** Define the starting conditions for each agent. This includes their location within the grid, desired direction of movement (often towards the nearest exit), initial speed (if your model allows for variable speeds), and any other relevant attributes. These attributes might include factors like their familiarity with the environment, propensity to panic, or tendency to follow others.

Step 3: Directing the Action - Defining the Rules of Movement

The heart of a CA model lies in its rules, the set of instructions that govern how agents move and interact within the environment. Simple yet powerful rules determine the emergent behavior of your simulated crowd, shaping the overall evacuation dynamics.

- **Movement Rules:** Define how agents select their next move. In the LGM, for example, the movement is determined by a drift probability towards the preferred direction and equal probabilities for other directions [11]. In the FFM, movement is governed by the combined influence of the static and dynamic floor fields [9].

- **Interaction Rules:** Define how agents interact with each other and the environment. These rules might include obstacle avoidance mechanisms, where agents adjust their direction to avoid collisions with walls, furniture, or other pedestrians. You might also incorporate rules for herding behavior, where agents tend to follow the movements of those around them, or rules for panic,

where agents might deviate from optimal paths or increase their speed in response to perceived danger.

- **Exit Rules:** Determine how agents behave when they reach an exit. This might involve removing them from the simulation, adding them to a tally of successfully evacuated individuals, or triggering specific events, such as a decrease in overall panic levels or a change in the dynamic floor field.

Step 4: Executing the Simulation

With the environment, initial conditions, and rules in place, it's time to set your simulation in motion. This involves stepping through discrete units of time, updating the state of each agent based on the defined rules and the states of their neighboring cells.

- **Time Step Loop:** The core of your simulation is a loop that iterates through time steps. In each time step, the model evaluates the rules for each agent, determining their next actions based on their current state and their neighborhood.

- **State Updates:** The states of all agents are then updated simultaneously or sequentially. Simultaneous updates, where all agents move at the same time, can lead to conflicts if multiple agents attempt to occupy the same cell. These conflicts can be resolved by various mechanisms, such as randomly selecting a "winner" or introducing a friction parameter that represents the probability of no one moving [15]. Sequential updates, where agents are updated one by one in a predetermined or random order, can avoid conflicts but might introduce artifacts if the update order is not carefully chosen.

- **Data Collection:** Throughout the simulation, collect relevant data for analysis. This might include the number of evacuated agents at each time step, the total evacuation time, the density of agents in different areas, the flow rate through exits, and any other metrics relevant to your research questions.

Step 5: Analyzing the Performance - Interpreting the Simulation Output

The final stage of the implementation process involves analyzing the data generated by your simulation to draw conclusions and answer your research questions. This analysis often involves:

- **Visualization:** Create visual representations of the simulation results, such as animations of the evacuation process, density maps showcasing areas of congestion, or graphs plotting the number of evacuated agents over time. Visualizing the results can help you identify patterns, bottlenecks, and areas where the evacuation process could be improved.

- **Metric Calculation:** Calculate relevant metrics, such as the average evacuation time, the flow rate of agents through exits, the density of agents in different areas, and the frequency and severity of conflicts.

- **Interpretation:** Interpret the results in the context of your research questions, drawing conclusions about the effectiveness of different evacuation strategies, the impact of environmental factors, and the behavior of crowds under specific conditions.

By carefully following these steps, you can build and execute your own CA-based evacuation simulations, gaining valuable insights into the dynamics of crowd movement and contributing to the development of safer and more efficient evacuation plans.

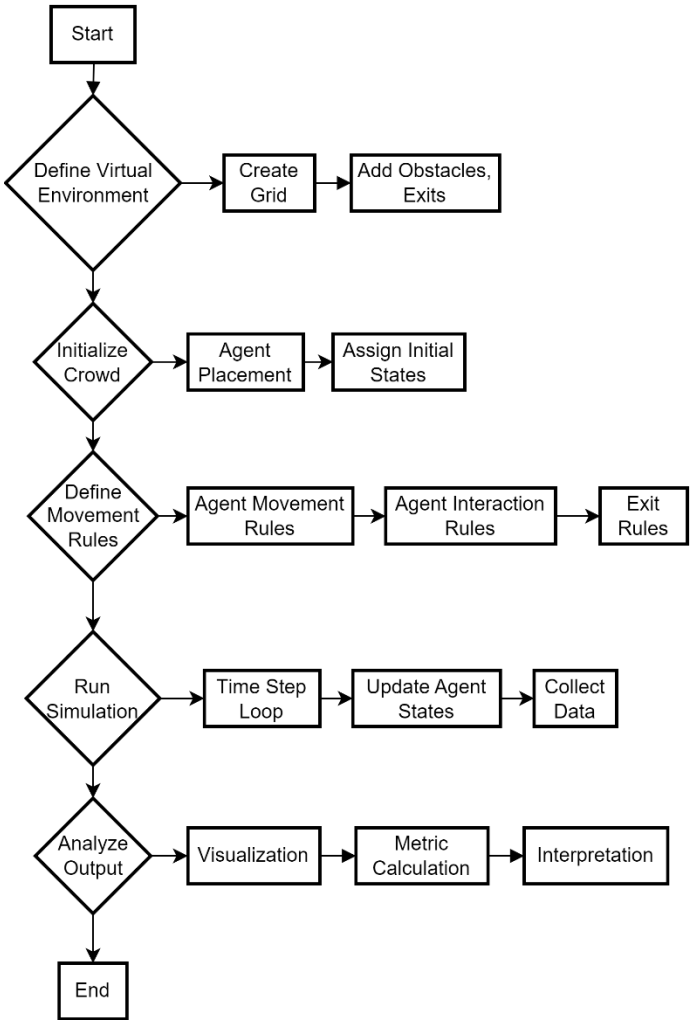

Figure 1: *Flowchart illustrating the steps involved in implementing a basic CA model for pedestrian evacuation simulation.*

5.DISCUSSION: HONING THE POWER OF CELLULAR AUTOMATA FOR EVACUATION SIMULATION

Cellular Automata (CA) models, with their elegant simplicity and remarkable ability to capture emergent behavior, have staked a significant claim in the field of pedestrian evacuation simulation. They offer a potent blend of computational efficiency and the capacity to simulate vast crowds navigating intricate environments, providing invaluable insights into the complex dance of human behavior under duress [9,10]. However, like any tool, CA models possess both strengths and limitations, shaping their applicability and guiding our pursuit of continuous improvement.

One of the most compelling advantages of CA models lies in their inherent computational efficiency. Unlike continuous models that demand computationally expensive calculations for each pair of interacting agents, CA models, with their discrete nature and local interaction rules, operate with a grace and speed that enables the simulation of large-scale evacuations with relatively modest processing power. This efficiency stems from the fact that the state of each cell can be updated independently, lending itself beautifully to parallel processing, where multiple calculations are performed concurrently, dramatically reducing simulation time.

Beyond their speed, CA models excel at capturing emergent behavior, a hallmark of complex systems where macroscopic patterns arise organically from the interactions of simple, local rules. Picture a murmuration of starlings, thousands of birds swirling in mesmerizing patterns, each reacting solely to its immediate neighbors, yet collectively creating a breathtaking aerial ballet. Or envision a school of fish

moving in synchronized waves, individual actions giving rise to a mesmerizing collective flow. CA models, by mirroring this bottom-up approach, can effectively simulate the self-organization and unpredictable dynamics often observed in real-world crowds. Simple rules governing individual pedestrian movements can generate complex collective phenomena such as lane formation, bottlenecks, shockwaves, and even the counterintuitive "faster-is-slower" effect, where a crowd's eagerness to move quickly can paradoxically lead to a slower overall evacuation [16].

The flexibility and extensibility of CA models further enhance their allure. Researchers can readily tailor these models to mirror specific evacuation scenarios and address particular research questions. They can introduce new rules, modify existing ones, and seamlessly incorporate a diverse array of factors that influence pedestrian behavior. Obstacle avoidance can be implemented by adjusting movement probabilities based on the presence of walls and furniture, while varying walking speeds can be captured by allowing agents to traverse multiple cells within a single time step [17]. Herding behavior can be simulated by increasing the attractiveness of paths already trod by others, capturing the human instinct to follow the crowd [18]. Panic, with its potential to disrupt order and lead to less predictable movements, can be modeled by introducing randomness into the system or by allowing agents to deviate from otherwise optimal paths [16]. Even strategic decision-making, rooted in game-theoretic principles, can be integrated, allowing agents to evaluate different options and choose those that minimize their perceived risk or cost [19].

However, despite their undeniable strengths, it's crucial to acknowledge the inherent limitations of basic CA models. Their elegance lies in their simplicity, yet this simplicity can sometimes be a source of abstraction, potentially leading to a loss of realism in certain situations. The discrete representation of space and time, while computationally advantageous, can fail to capture the subtle nuances of pedestrian movement, such as the slight adjustments, hesitations, and intricate avoidance maneuvers that characterize real-world crowd dynamics [5].

Calibration and validation pose another significant challenge. Accurately tuning a CA model's parameters and rules to align with real-world evacuation data demands meticulous consideration and often involves making assumptions and simplifications. Obtaining reliable empirical data for validation, such as detailed recordings of pedestrian movements during actual evacuations, can be fraught with difficulties, incurring high costs and raising ethical considerations. This scarcity of robust validation data can limit the confidence we place in a model's predictions and hinder its ability to inform real-world decision-making [20].

Perhaps the most daunting limitation lies in capturing the full complexity of human behavior during evacuations. While CA models can incorporate simplified representations of herding, panic, and route choice, the intricate interplay of individual psychology, social influences, and environmental factors often eludes them. Individuals within a crowd are not homogeneous units; they possess diverse personalities, motivations, risk perceptions, and decision-making styles. Social ties, such as families or groups of friends evacuating together, can exert a powerful influence on movement patterns, as demonstrated in the work of Lu et al. [21]. Factors like stress, anxiety, and access to information can further complicate matters, leading to unpredictable behaviors that deviate from the simplified rules of basic CA models.
Fortunately, these limitations are not insurmountable barriers but rather stepping stones on the path toward continuous improvement. Several promising avenues exist for enhancing the realism, accuracy, and applicability of CA models for pedestrian evacuation.

- **Embracing the Power of Data:** Imagine CA models infused with a constant stream of real-world data from surveillance cameras, sensor networks, and even social media feeds [22,23]. This data can be used not only to calibrate model parameters and fine-tune behavioral rules but also to validate simulation outputs against actual observations, ensuring that our models reflect the complexities of real-world evacuations.

- **Building Bridges with Hybrid Models:** Combining the strengths of CA with other modeling techniques, such as agent-based modeling (ABM), can lead to more comprehensive and insightful

simulations [24]. While CA excels at simulating crowd dynamics at a macroscopic level, ABM allows for the representation of individual agents with unique characteristics, behaviors, and decision-making processes. These hybrid models can capture both the emergent patterns of the crowd and the nuanced choices of individuals, providing a more holistic view of evacuation dynamics.

- **Integrating Behavioral Insights:** Drawing from the rich tapestry of psychology, cognitive science, and behavioral economics can inject a dose of human realism into CA models. Understanding how individuals perceive risk, process information under stress, make decisions in the face of uncertainty, and respond to social influences can lead to more accurate and nuanced simulations [25,26].

- **Expanding into Three Dimensions:** Moving beyond the constraints of two-dimensional representations, the development of three-dimensional CA models can unlock new possibilities for simulating evacuations from multi-level environments, such as high-rise buildings, stadiums, and underground spaces [27,28]. These models can capture the challenges of navigating stairs, ramps, and elevators, leading to more realistic representations of crowd movement and providing invaluable insights for architects, urban planners, and emergency responders.

Continually pursuing these advancements will equip us with increasingly powerful tools for understanding and mitigating the risks inherent in crowd evacuations. These models, in turn, will contribute to the design of safer buildings, the development of more effective evacuation plans, and ultimately, the creation of environments where people can face emergencies with greater confidence, preparedness, and resilience.

6.CONCLUSION: TOWARDS SAFER EVACUATIONS THROUGH THE POWER OF SIMULATION

This exploration of basic Cellular Automata (CA) models for pedestrian evacuation has revealed their remarkable ability to capture the intricate dynamics of crowds in motion, offering a valuable toolset for enhancing safety and preparedness in a wide range of scenarios. We began our journey by laying the groundwork, delving into the fundamental principles of CA and their unique suitability for simulating complex systems. From the grid-based representation of space and discrete time steps [7] to the elegant interplay between local rules and emergent behavior [8], CA models provide a compelling framework for unraveling the complexities of pedestrian evacuation.

We then turned our attention to specific models, each representing a distinct approach to capturing the essence of pedestrian movement and interactions. The Lattice Gas Model, with its simple drift probability, offered a foundational understanding of how individual agents navigate towards exits, while the Floor Field Model, with its sophisticated interplay of static and dynamic fields, significantly advanced the realism of CA-based simulations [9,10]. We explored other field-based models, such as the Potential Field Model [12], the Electrostatic-Induced Potential Field Model [13], and the Cost Potential Field Model [27], each providing a unique lens through which to understand the forces influencing pedestrian movement.

Our implementation guide equipped readers with a practical roadmap for building and executing their own CA-based simulations, outlining the essential steps involved in transforming architectural plans into a digital reality populated with simulated crowds. We emphasized the importance of thoughtful consideration when defining the virtual environment, initializing the crowd's characteristics, establishing behavioral rules, and analyzing the resulting data. The power of data-driven approaches, using real-world observations to calibrate and validate models, was highlighted as a crucial step towards ensuring the accuracy and reliability of simulation results [24].

While CA models offer significant advantages in terms of computational efficiency and their ability to capture emergent behavior, we acknowledge the ongoing challenges in representing the full nuance and

complexity of human behavior during evacuations. The inherent abstraction of CA models, with their discrete representation of space and time, can sometimes lead to a loss of fidelity in capturing the subtle movements and interactions of pedestrians [5]. Accurately simulating the heterogeneity of individual responses, the influence of social dynamics (such as kinship behavior as explored in Yang et al., 2005), and the impact of psychological factors like stress and anxiety require continuous refinement and the integration of insights from diverse fields.

Looking ahead, the future of CA-based evacuation modeling is bright, propelled by the pursuit of greater realism, accuracy, and insight. The integration of data-driven approaches, fueled by increasingly sophisticated data sources and analysis techniques, promises to enhance both the calibration and validation of models. Developing hybrid models, blending the strengths of CA with other techniques like agent-based modeling, can lead to more comprehensive simulations that capture both the emergent patterns of the crowd and the nuanced decisions of individual agents [24,29]. Incorporating insights from behavioral science, psychology, and cognitive modeling can breathe life into our simulations, moving beyond simplistic representations of panic and herding towards a richer understanding of how individuals perceive risk, process information, and make decisions under pressure [25,26]. Finally, the development of three-dimensional CA models will allow us to simulate crowd movement within multi-level environments, providing a more realistic representation of evacuations from complex structures like high-rise buildings and stadiums [27,28].

The knowledge we gain from these simulations transcends academic curiosity, holding the potential to save lives and mitigate risks in the real world. By informing the design of safer buildings, optimizing the layout of public spaces, and enhancing the effectiveness of evacuation procedures, CA models empower us to anticipate potential hazards, evaluate various interventions, and ultimately, create environments where people can navigate emergencies with greater confidence and safety. As research in this field continues to advance, we can expect CA models to play an even more prominent role in shaping a safer and more resilient future.

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APPENDIX A: SOFTWARE TOOLS FOR CA-BASED EVACUATION MODELING

This appendix provides a curated list of software tools and libraries commonly used for developing and executing CA-based pedestrian evacuation simulations. The list includes both commercial and open-source options, along with brief descriptions of their key features and capabilities.

Commercial Software:

- **FDS+Evac:** Developed by the National Institute of Standards and Technology (NIST), FDS+Evac is a widely used tool for fire and evacuation modeling. It combines a computational fluid dynamics (CFD) model for fire simulation with a CA-based approach for pedestrian evacuation. It allows for detailed analysis of smoke spread, fire development, and pedestrian movement during fire emergencies. https://github.com/firemodels/fds
- **MassMotion:** A sophisticated 3D simulation software developed by Oasys, MassMotion is designed for analyzing pedestrian movement and crowd behavior in various built environments. It uses a combination of CA and agent-based modeling techniques to simulate complex scenarios, optimize pedestrian flow, and assess safety measures. https://www.oasys.com/software/engineering/pedestrian-modelling/
- **Pathfinder:** Developed by Thunderhead Engineering, Pathfinder is another powerful tool for simulating pedestrian movement and evacuation. It utilizes a continuous-space model that allows for more realistic pedestrian interactions and movement compared to traditional grid-based CA models. It's particularly well-suited for analyzing complex geometries and high-density crowds. https://www.thunderheadeng.com/pathfinder/

Open-Source Software and Libraries:

- **NetLogo:** A popular agent-based modeling environment, NetLogo also provides support for CA modeling. Its user-friendly interface and extensive library of pre-built models make it a great option for both beginners and experienced modelers. https://ccl.northwestern.edu/netlogo/
- **Repast Simphony:** A Java-based ABM toolkit, Repast Simphony also offers support for CA modeling. Its flexible architecture and extensive documentation make it a powerful tool for researchers and developers working on complex simulations. https://repast.github.io/
- **Python Libraries:** Python, a versatile programming language widely used in scientific computing, offers several libraries for CA modeling:
    - **NumPy:** A fundamental library for numerical computing in Python, NumPy provides efficient array operations that can be used to implement CA models.
    - **SciPy:** Building upon NumPy, SciPy offers a collection of algorithms and functions for scientific computing, including image processing tools that can be useful for visualizing CA simulations.
    - **Mesa:** A Python framework specifically designed for agent-based modeling, Mesa also supports CA modeling and provides a structured approach to building and running simulations.

This list provides a starting point for exploring the diverse landscape of software tools available for CA-based evacuation modeling. The choice of the most appropriate tool depends on several factors, including the specific requirements of the simulation, the user's experience level with different programming languages and modeling environments, and budget constraints.

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The Impact of Social Movements on The Spatial Configuration of City Squares: Kızılay Square from 1950s to Today[1]

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Abstract

City squares have been the scene of various political, social events and have assumed political functions. The political ideology forms the basis of spatial formation and the social opposition to it has necessitated the transformation of urban spaces. The dialectical relationship between space-social movements has been decisive in transforming squares into spaces of representation. In Ankara, Kızılay Square is the place where social movements are most intensely realized. This study aims to analyze the spatial transformation of Kızılay Square from 1950 to the present on the basis of social movements. In this study, the Republican Period is divided into three sub-sections: 1950-1980, 1980-2000 and after 2000. Breakpoints in political economy decisions and urban policies were taken into consideration in the subdivisions. For each period, the spatial formation of Kızılay Square and the social movements in Kızılay Square were presented, then the data obtained for each of the three periods were compared. Spatial analysis of Kızılay Square, planning and construction data, visuals, and digital aerial photographs of Kızılay and its surroundings obtained by the General Directorate of Mapping of the Ministry of National Defense the Republic of Turkey were used. From the 1950s to the present day, Kızılay Square has increasingly lost its cultural, bureaucratic, political and social functions and the space has been fragmented and detached from its gathering function. As a result of this transformation, Kızılay Square has been reproduced with changing ideologies, eroding its place in the social memory as well as its position in the urban memory.

1. INTRODUCTION

City squares, which are among the most important public urban spaces, are constantly changing and transforming due to factors such as social and economic structures, ideologies, and cultural values. As Lefebvre argued, space is a social product, simultaneously shaped by and reflective of social and political ideologies [1]. In addition to their established basic functions, city squares have historically acquired political roles by serving as venues for social movements. The formal characteristics of city squares, having undergone various changes and transformations across different historical periods, have been determined by political ideologies throughout a process of reproduction.

Ankara, as the capital designated immediately after the proclamation of the Republic, embarked on a rapid development process The Lörcher Plan, designed by the German architect Carl Christoph Lörcher between 1924 and 1925, was the city's first zoning plan and designated 'Yenişehir' as the new development area [2]. Within the scope of the plan, Atatürk Boulevard was designated as the urban axis connecting the old city center of Ulus with the new settlement of Yenişehir and city squares were designed as public connectors between the residential areas along the boulevard [2]. Kızılay Square, which has the feature of being the site of the first modern public urban practices, holds strategic value due to its location and function [2]. Kızılay Square, which functioned as a gathering, meeting, and socializing space until the 1950s, underwent significant spatial changes from the 1950's onwards and emerged as a focal point for mass social movements from the 1960's onward. Throughout its extensive history from the 1950s to the present, Kızılay

[1] The preliminary version of this paper was presented at the Mimar Kemaleddin Symposium organized by Gazi University Faculty of Architecture in Ankara on December 27-29, 2023.

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Square has acquired various meanings and functions through the process of spatial reproduction shaped by the ideologies of each period, while simultaneously becoming the center of political struggle and mass social movements in response to social issues.

This study examines the changes and transformations in Kızılay Square, which has undergone a long historical process from the Early Republican Period to the present. The square, having been shaped by dominant political powers and having served as a focal point for social movements, has experienced significant shifts in its functional status and spatial identity. In this context, the aim of the study is to question the relationship between space and society by determining the role of social movements in the spatial formation of Kızılay Square. Additionally, it aims to examine the impact of social practices on the formal transformation of urban spaces. Kızılay Square, which witnessed the most significant social movements during the Republican Era, acquired different representations in each period. It was reproduced in alignment with political ideologies and remains the most important symbolic public space in the capital. As such, it serves as the center of political struggle in Republican Ankara. Kızılay Square has been the site of student and labor movements that emerged in response to social problems and economic conditions that have risen since the 1960s. Alongside these ongoing protests, changes have been observed in the spatial context of the square. Originally conceived as a place of socialization and a symbol of the nation-state, the square has evolved into the epicenter of rent-based urban development over time. The transformation described in the square has also altered the course and frequency of social movements. The extent to which the protests in the Square from the 1950s to the present have affected spatial change characterizes the scope of the research. This research seeks to answer the following questions: What practices of social movements, recognized as historical breaking points, take place in city squares? How are these practices organized, and what effects do they have on the transformation of the spatial identity of these squares? This study was presented at the Mimar Kemaleddin Symposium held at Gazi University on December 28, 2023. This study is based on a master's thesis written in the architecture master's program of the architecture department of Atılım University.

2.METHOD

The academic literature review indicates that theses, articles, papers, and book publications examining the relationship between space-ideology and urban space-social movements encompass a broad range of topics. This study utilized book publications that address urban planning, urban spaces, and social relations in Ankara. This study incorporated data on the historical stages of the city and urban spaces to gain a deeper understanding of the processes of development and transformation in Kızılay Square.

Various articles on urban space, urban squares, Ankara, and Kızılay Square were referenced in this study. The sources focus on the spatial and functional changes of city squares and urban spaces, the role of social movements in these squares, and their associated representational values. Additionally, the sources analyze urban areas from a macro to micro scale, focusing on the symbolic value and identity of spaces within a single study area based on urban planning, architectural design, and the relationship between space and society.

A thorough literature review indicates that while numerous academic studies have explored the relationship between space and ideology, there is a notable scarcity of research focusing specifically on this relationship in the contexts of social movements and the spatial formation of city squares. While a significant body of literature exists on Kızılay Square, there is a notable lack of studies that separately examine social movements and spatial formation within the Square across distinct historical periods and conduct comparative analyses. This study is anticipated to make a significant contribution to the literature by conducting a historical analysis of the data and implementing the historical comparison method.

The date range of the study is divided into three sub-periods: 1950-1980, 1980-2000 and 2000 and beyond. In establishing the date ranges, significant turning points in political economy, as well as political and social changes were taken into account. The study examines the spatial configuration of Kızılay Square in relation to the social movements that have occurred in the area during three distinct periods and it incorporates a

comparative analysis of the data collected from each of these periods. For the spatial analysis, planning and construction data, visuals, and digital aerial photographs of Kızılay and its surroundings-sourced from the General Directorate of Mapping of the Ministry of National Defense of the Republic of Turkey were utilized.The research presents the spatial design and development process of Kızılay Square from the proclamation of the Republic in 1923 to the 1950s. Notably, as no significant mass movements or activities were observed during this period, it was excluded from the study's data and analyses. For the sub-periods of 1950-1980, 1980-2000, and after 2000, the spatial transformation of Kızılay Square was analyzed initially at the urban scale and subsequently at the scale of the built environment. This approach detailed the spatial changes in the Square and its immediate surroundings while documenting the social movements that occurred during these periods using newspaper archives. In the research, the spatial configurations of each period and the transformations resulting from social movements are systematically summarized in tabular format. The spatial boundaries of social movements, along with the delineations of the square and the structural changes in its immediate surroundings, were mapped utilizing aerial photographs acquired for each period. The social movements that emerged in relation to social problems and were seen as masses are included in the study. The methodology and scope of the study were delineated with careful consideration of potential limitations related to temporal and contextual factors.

3. THEORETICAL FRAMEWORK: THE RELATIONSHIP BETWEEN CİTY SQUARES AND SOCIAL MOVEMENTS

To establish the theoretical framework and background of the study, the relationship between urban spaces and social movements is briefly explored. Additionally, the historical evolution of social movements in theory and their connections to spatial contexts are examined.

3.1. Theoretical Development of Social Movements and Their Relationship with City Space

The issue of social movements has been discussed in the world since the second half of the 18th century, but by the 19th century, it had entered the written literature and started to be included in the literature of social sciences [3]. Tilly stated that an important change in the 19th century was the transformation of the actions carried out by various groups in the traditional context into organized, collective and continuous actions demanding new rights and opportunities [4].

Giddens stated that the organization of different social groups for a common interest and the struggles to achieve a common goal have been defined as social movements since the 19th century [5]. According to Tarrow, a prominent scholar in social history and sociology, social movements are areas of collective resistance that arise against the bourgeoisie, capitalist class, and political authorities, characterized by shared values and situated within the relationship between the ruling power, which controls the means of production, and the subjugated. [6]. Proponents of the view that collective solidarity is essential for mass organization assert that the cohesive existence of communities with a shared identity, such as workers and students, is necessary for social movements to expand to larger populations and facilitate participation. [7].

Urban social movements, as a form of societal organization, transform urban space into a socio-political arena for interaction. At this point, questions arise regarding the extent to which social movements can transform urban spaces that have become commodified, along with the mechanisms through which this transformation occurs. [8]. The organizational space for social movements within the city is comprised of urban public spaces. Throughout history, political power has reconfigured urban space to sustain its dominance. The reproduced urban space becomes a political arena in which power is expressed and exerted on society through both physical and political demonstrations. [9]. As a result of interventions by power centers in urban space, social movements can be organized, or urban space can be strategically modified to influence the direction of these movements. Social movements have played a decisive role in shaping the political function of urban squares by selecting locations that are most conducive to gathering, organizing, and executing actions.

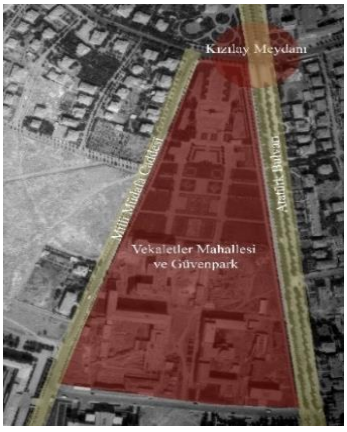
4. FINDINGS: SPATIAL CONFIGURATION AND SOCIAL MOVEMENTS IN KIZILAY SQUARE FROM 1950 TO THE PRESENT

The research first presents the design and development process of Kızılay Square from the proclamation of the Republic in 1923 until the 1950s. This period is addressed solely in terms of spatial development and is excluded from the discussion data, as the square had not yet begun to witness mass protests. The periods 1950-1980, 1980-2000, and after 2000 are analyzed with respect to spatial changes at both the urban and structural scales, while the social movements that emerged concurrently are discussed within a historical framework. The findings from the final data are summarized as tabular data in the sub-sections. Finally, all historical data are compared in the conclusion section.

4.1. Spatial Formation Process of Kızılay Square Between 1923-1950

Kızılay Square is an urban public space that has developed and symbolized over time within the newly established nation state's ideal of creating a modern capital city. Havuzbaşı, formerly the city's most prominent public space until 1930, significantly contributed to the development of what eventually emerged as Kızılay Square. Kızılay Headquarters, which served as a symbol of national solidarity during this period, played a crucial role in designating the area known as Havuzbaşı as Kızılay Park, the region referred to as Yenişehir as Kızılay, and the square as Kızılay Square [10]. Kızılay Headquarters, designed by Austrian architect Robert Örly, was constructed on the site of the water-haunted pool known as Havuzbaşı, with its garden subsequently designated as Kızılay Park [10]. Kızılay Park was one of the few public urban spaces of the period, playing an important role in terms of urban culture.

Kızılay Square and Atatürk Boulevard, serving as the spine of the city, are spatially interconnected. In the Lörcher Plan, Atatürk Boulevard along the north-south axis and Ziya Gökalp Boulevard along the east-west axis were established as the two primary urban axes of Ankara, with Kızılay Square designed at their intersection [11]. During this period, the boulevard emerged prominently alongside public parks. Within the scope of the Jansen Plan, which traced the urban areas defined in the Lörcher Plan, a public space known as 'Güvenpark' was constructed between 1932 and 1936 by Austrian architect Clemens Holzmeister, one of the most significant architects of the period directly opposite Kızılay Park [12]. Güvenpark created both a spatial and social transition between residential buildings and public buildings in this area. Within the framework of the Jansen Plan, an urban triangle comprising ministry buildings, referred to as 'Vekaletler District' (Triangle of Ministries), was designed in this area, and in this context, the development of Atatürk Boulevard gained momentum (Figure 1,2).



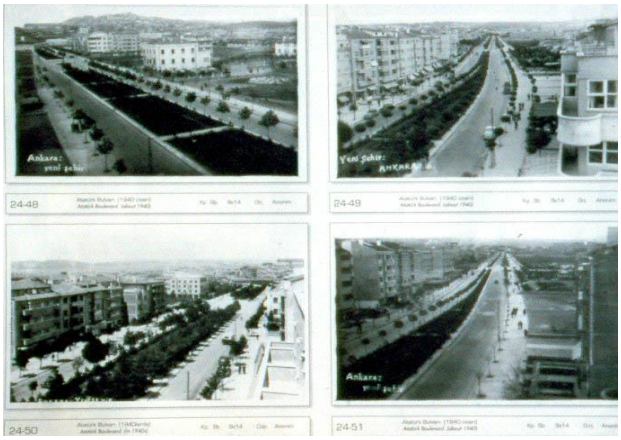


Figure 1*. 1939 Aerial Photograph of Kızılay Square and Surroundings (T.C. General Directorate of Mapping, C5-562 Digital Aerial Photograph, edited by the author).*
Figure 2. *Atatürk Boulevard Yenişehir, 1930 -1940 [12].*

Between 1923 and 1950, it is possible to say that there was no social movement regarding Kızılay Square. In this period, the initiatives of political ideology regarding the formation and development of the square

came to the forefront. The social mobility of the square consisted of practices such as gatherings and meetings. From the 1960s onwards, there will be changes in how the square is used, its function and its place in the urban memory.

4.2.Spatial Formation and Social Movements in Kızılay Square Between 1950-1980

4.2.1. Spatial Formation of Kızılay Square in the 1950-1980 Period

From the early 1950s onwards, Kızılay began to be constructed as a commercial center in line with changing ideologies and economic policies. After the 1957 Yücel-Uybadin Plan, it is possible to say that the city grew even faster than envisioned. Kızılay Park, which was one of the most important public spaces of the city in the past, became smaller and turned into an institutional garden with the widening of Atatürk Boulevard and Ziya Gökalp Street [12]. During this period, Kızılay Square became more clearly defined in relation to Güvenpark, Atatürk Boulevard, and Vekâletler District. Güvenpark and Kızılay Square both developed in close physical and functional proximity to one another. The widening of the boulevard significantly affected both Güvenpark and Kızılay Square; nonetheless, these spaces continued to function as the public core of the city until the 1980's. The increasing density of buildings surrounding the square and the concurrent population growth in the area progressed in parallel. In this context, Kızılay Square operated as a public connector between residential districts, administrative facilities, and commercial establishments (Figure 3).

Figure 3. *Kızılay Square and Surroundings, Aerial Photograph dated 1952 (Republic of Turkey General Directorate of Mapping, 384_118 Digital Aerial Photograph, edited by the author)*

One of the most significant structures that altered the spatial character of Kızılay and Kızılay Square in accordance with the decisions of the Yücel-Uybadin Plan is the Emek Business Building, which was constructed between 1959 and 1965. Following the construction of the building, the density of commercial structures within the square began to rise, resulting in a transformation of the square's functional character.

As a result of the liberal urbanization policies initiated by the Yücel-Uybadin Plan, which exerted a long-term influence, regulations such as road widening, sidewalk narrowing, lowering of road levels, and tree removal contributed to the gradual alteration and transformation of Atatürk Boulevard.[13]. The widening of the boulevard, Kızılay Park, which was deprived of its public character and transformed into an institutional garden, completely lost its significance. Kızılay Square and Güvenpark, whose physical conditions were altered due to the expansion of the boulevard in the 1970's, gradually diminished and became spatially weakened with the establishment of bus stops. The 1970s marked a period during which Atatürk Boulevard and the urban fabric experienced significant changes that impacted the spatial condition and function of the square. In this period, pedestrianization applications for the Kızılay direction of Atatürk Boulevard were brought to the agenda but few of them were realized and the front facades of the buildings were added to the boulevard [14].

The transformation of the Boulevard and Güvenpark with a focus on vehicular traffic was also reflected in the public character of the square. The transformation of Kızılay Park from a public space into a private institutional garden led to its gradual disappearance within the city. Additionally, the Kızılay Headquarters building, which had lent its name to the square, was demolished in 1979. Following this, the area was converted into a parking lot. The construction of a new structure in the area previously used as a parking lot has been proposed for consideration. An architectural project competition for the planned Kızılay Social and Rant Facilities Building (Kızılay Shopping Center) was held in 1980, and architects Affan Yatman and Nesrin Yatman won the competition. [15]. For the selected project, concerns were raised regarding its negative impact on the square's appearance, exacerbation of the existing chaos in the area, destruction of green space, and increased burden on vehicle traffic, which resulted in delays in the project (Figure 4).



Figure 4a. *Emek Business Center and Kızılay Square [16]* ***Figure 4b.*** *Atatürk Boulevard, Kızılay 1970s [17]* ***Figure 4c.*** *Location of the demolished Kızılay Headquarters Building early 1980s [18] (from left to right)*

4.2.2. Social Movements in Kızılay Square between 1950-1980

Between 1950 and 1980, hundreds of rallies, protests, demonstrations, marches, commemorations, strikes, etc. were organized in Kızılay Square under the leadership of worker and student groups. Due to the limited scope of the study, the most massive and loudest protests were included. Between 1960 and 1964, anti-government protests by student groups gained momentum. On the way to the May 27 coup d'état, the most prominent mass action was the student movement known as the 'April 28-29 Events'. On April 27 1960, students first rioted in Istanbul and then the events continued in Ankara [19]. One of the most prominent protests of the period was the '555K' Events that took place in Kızılay Square on May 5, 1960. It was the first social movement among the Kızılay-based student protests against the DP administration [20]. One of the mass protests that took place in the square was the one organized by the students of the Military Academy on May 21, 1960. The group gathered in front of the Sıhhiye Orduevi and marched as a large crowd from the Kolej to the Victory Monument in Zafer Square, and then proceeded to Kızılay Square. The largest mass action after the coup was the workers demonstration of June 15-16, 1970. The rising unemployment rate resulting from the economic crisis caused by inflation led to an uprising against the government, with workers, alongside students, beginning to emerge as political actors in public spaces. On June 16th in Ankara, a group of protesters, including students, marched from Ulus to Kızılay; however, they were frequently obstructed by the police. [21]. The aforementioned protests represented the largest opposition to critical events such as coups and political economic decisions during the period from 1950 to 1980. The protests played a role in the formation of the political identity of the square and its transformation into a political arena. Newspaper archives were used to provide data on the protests. Figure 5 and Figure 6 presents examples of the most widespread protests of the period.


Figure 5. *555K Movement 1961(Cumhuriyet Newspaper E-Archive)*
Figure 6. *June 15-16, 1970 Action (Cumhuriyet Newspaper E-Archive)*

4.2.3. Evaluation: The Effect of Social Movements on Spatial Formation in the 1950-1980 Period

Between 1950 and 1980, many spatial applications were carried out in Kızılay Square at both macro and micro scales. The main approach to transportation, infrastructure, and superstructure decisions made in the square and its surroundings may not directly alter the trajectory of social movements; however, the frequency and forms of actions have played a role among the factors influencing spatial interventions. Analyses regarding the role of social movements of the time in the spatial transformation of the square are provided in Table 1. The data in the table summarizes the spatial formation of the period from 1950 to 1980, the spatial configuration of the square and its surroundings at urban and structural scales, the historical and event-based social movements, and the effects of these actions on the spatial character of Kızılay Square.

Table 1*. Analysis of the Effects of Social Movements on the Spatial Formation of Kızılay Square between 1950-1980*

Spatial Formation in the 1950-1980 Period		**Social Movements in the 1950-1980 Period**		**The Effect of Actions on Spatial Formation**
		Date	**Events**	
Macro Scale Urban Change around the Square	• 1957- Yücel Uybadin Plan- Development of Kızılay as a center, commercial and transportation based projects, high-rise blocks • 1960s- Widening of Atatürk Boulevard and Ziya Gökalp Street • 1970s- Removal of Kızılay Park, widening of the boulevard, Kızılay Square and Güvenpark public transportation stops	• April 20 1960	• Anti-government student protest	• Restricted pedestrian interruptions on Milli Müdafaa Street: shrinking circulation space for social movements • 1960-1970 social movements: compression of the square and the pedestrian zones around it • June 15-16 Events: Between 1970 and 1980, a decrease in the frequency of protests as the square was destroyed by interventions. • The actions and the formal and functional change/transformation of the square took place simultaneously.
		• April 28-29 1960	• Mass students actions	
		• May 5 1960	• 555K Student Action	
		• May 21 1960	• Military School student protest	
		• May 27 1960	• Mass protests after the coup	
		• January 6 1961 •	• Procession to parliament	
		• September 21 1962	• Womens Right Actions	
Changing the Square's Perimeter on a Structural Scale	• 1965- Emek Business Center, 1967- Gima Store • 1979- Demolition of Kızılay Headquarters Building, 1980- Kızılay Shopping Center Project • Conversion of 3-4 storey houses into 7-8 storey blocks	• January 23 1963	• Political Sciences Students' Action	
		• March 24 1963	• University students protest	
		• December 27 1963	• Student protest	
		• 1963	• Kavel Action	
		• June 15-16 1970	• Labor protest	

4.3. Spatial Formation and Social Movements in Kızılay Square in the 1980-2000 Period

4.3.1. Spatial Formation of Kızılay Square in the 1980-2000 Period

When the urban development model focused on trade and transportation was adopted during this period, Kızılay emerged as a commercial center favored by middle-income users. Road expansion works on the city's main routes, including Atatürk Boulevard, came to the forefront during this period, making it inevitable for the Square to evolve into a transit space. In this context, the urban interventions in the redeveloped Kızılay Square clearly highlight its prominence as a transfer and transit center within its multiplicity. Kızılay Square, located at the intersection of Atatürk Boulevard and Ziya Gökalp Boulevard, has evolved into the central hub and transfer point for the city's main arteries. After 1980, the square evolved into a transfer center for public transportation vehicles such as minibuses and buses, leading to restrictions in areas designated for pedestrians.

A major functional change in the square occurred with the replacement of the Kızılay Headquarters, originally designed in 1929, by the Kızılay Shopping Center, which was designed by Nesrin Affan Yatman and completed in 1979. The launch of the project selected as the winner in the competition introduced a new topic to the discussions surrounding the square in 1998. [13]. The correlation between the building's architecture and the square has initiated debates among both residents and civil society organizations. The building was opened after 2000, following a period of construction and objections that persisted from 1980 to 2000.

Güvenpark, which had a significant impact on the square's physical structure and public character, was reintroduced to the agenda through a renovation project in 1985. Ankara Metropolitan Municipality initiated the project, and among the proposals, the design by architect Sezar Aygen was considered worthy of implementation. The project planned for underground construction also included changes to be made to Güvenpark's current state. Sezar Aygen proposed relocating the Güven Monument from its original position in Güvenpark to a perpendicular alignment at the intersection encompassed by the square, with the aim of enhancing the overall experience of the square. [21]. A 'Spread Environmental Sensitivity Group' started a signature campaign with the slogan 'Not a Parking Lot, Güvenpark', collecting 60,000 signatures to cancel the project, leading to the decision to stop the project [21].

The metro line projects planned to be the transfer center for Söğütözü-Cebeci and Kızılay-Batıkent have proposed Kızılay Square as a transfer center. After the cancellation of the Güvenpark Renovation Project, the Ankara Metropolitan Municipality suggested that commercial facilities should also be included in the architectural program of the metro station project, planning for the square to be a transfer and shopping point. With the start of the project, Güvenpark has taken on the appearance of a construction site, trees have been cut down and disruptions have been seen in the current texture of the area.

In this period, in addition to large-scale projects that have been or are planned to be carried out, changes at the building scale around the square have also come to the forefront. Between 1987 and 1989, with the construction of the Gama Business Center, a concentration of commercial buildings around the square can be observed [22]. In 1990, the facade renovation of the Yapı Kredi Building by Tekeli & Sisa Architecture serves as an example of rethinking. Visuals related to the urban and structural spatial decisions regarding the square are provided in Figure 7.

Figure 7.a. *1980s, the area where Kızılay Shopping Center is located is closed with barriers [23],*

***Figure 7.b**. Kızılay Square 1980s [24], **Figure 7.c.** Güvenpark Renewal Project Site Plan [25] (from left to right)*

***Figure 7.d.** Kızılay Square 1990s [26], **Figure 7.e**. Kızılay Square Metro Construction [27], **Figure 7.f.** Gama Business Center [28] (from left to right)*

4.3.2. Social Movements in Kızılay Square between 1950-1980

1950-1980 period, in addition to the events in the 1990s, social movements emerged in alternative urban spaces such as Sakarya Street, Yüksel Street, and Konur Street. Over time, these areas were transformed to be more pedestrian-friendly. After the ban on demonstrations until the early 1990s, permission was granted for May Day demonstrations in 1993. Apart from the celebrations, the demonstrations turned into clashes with the police and became one of the most massive protests after 13 years. The actions primarily shifted to Sakarya Street, Yüksel Street, and Konur Street, which were all pedestrianized during this period. These mentioned events are some of the most massive protests seen in Kızılay Square during this period. Between 1980-2000, numerous trade union movements took place but very few occurred in Kızılay Square. When compared to the movements between 1950 and 1980, the relatively low intensity of mass demonstrations in the square becomes particularly noteworthy (Figure 8).

***Figure 8.** Mass Actions in Kızılay Square (from left to right; 1989-1990 Spring Action, May 1, 1993 labor action, October 29, 1997 Republic Day celebrations, Trade union labor action in the late 1990s) [29]*

4.3.3. Evaluation: The Impact of Social Movements on Spatial Formation in the 1980-2000 Period

Between 1980 and 2000, three major projects emerged as focal points in Kızılay Square: Güvenpark Renewal Project, Söğütözü-Cebesi metro construction and Kızılay Shopping Center. These projects led to the unusable state of Güvenpark and Kızılay Square for a long time, resulting in a decrease in the frequency of social movements. Compared to the previous period, these urbanization projects significantly reduced pedestrian and protest movements in the square. Analysis of the role of social movements during that period in the spatial changes of the square is provided in Table 2.

***Table 2**. Analysis of the Effects of Social Movements on the Spatial Formation of Kızılay Square between 1980-2000*

Spatial Formation in the 1980-2000 Period		**Social Movements in the 1980-2000 Period**		**The Effect of Actions on Spatial Formation**
Macro Scale	• Neoliberal Urbanization Trends - Commercial and transportation-focused urban development - expanding	**Date**	**Event**	• In the 1985 Güvenpark Renovation Project, restricting the pedestrian
		• 1989-1990	• Spring Actions	

Urban Change around the Square	highways • Pedestrianization of Sakarya Street, Yüksel Street, and Konur Street axes. • The square being a hub for vehicle traffic • 1985-Güvenpark Renovation Project • 1990s - Metro Station Project	• 1990-1993	• The square being closed off for protests	flow to the lower level of the square led to limitations during mass demonstrations. • There have been spatial shifts in mass actions. • The square has turned into a construction site, becoming a passive recreational area • In parallel with the rising trade union movement in the 1990s, barriers were placed around the square.
		• 1990-2000	• Yüksel Street, Sakarya Street, Konur Street are small-scale events	
Changing the Square's Perimeter on a Structural Scale	• 1987-1989-Gama Business Center • 1990- Yapı Kredi Building Facade Renewal • 1998- The construction of Kızılay Shopping Mall has begun • Barriers set up around the square	• May 1, 1993	Workers' memorial action	
		• October 19, 1998	• Protest following conflict among municipal employees	
		• 1990'lar	• Trade Union Worker Protests	

4.4. Spatial Formation and Social Movements in Kızılay Square After 2000

4.4.1. Spatial formation of Kızılay Square After 2000

Beginning with the 1990 Nazım Urban Plan and becoming increasingly evident in the 2000s, new urbanization trends have resulted in significant changes to the city's morphology. The new urbanization practices have necessitated a shift from comprehensive planning to action planning, as urban lands have transformed into profit-focused areas due to market demands [22]. The trio of Kızılay Square, Atatürk Boulevard and Güvenpark, where social interaction is most intense, has become less preferred after 2000 as socialization practices shift from urban open spaces to enclosed shopping malls. Güvenpark's metro entrance and exit masses being occupied by public transport stops and the density of vehicle traffic make it a difficult area to reach for pedestrians, directly affecting the interaction between Güvenpark and Kızılay Square. In the process leading up to the 1990s, when evaluating the square in terms of pedestrian density, Güvenpark, Kızılay Square, Atatürk Boulevard and the area where the main axes intersect serve as key nodes of activity. As an alternative to the square, Sakarya Street, Yüksel Street, and Konur Sokak have gradually become areas with increasing pedestrian flow after 2000 (Figure 9).

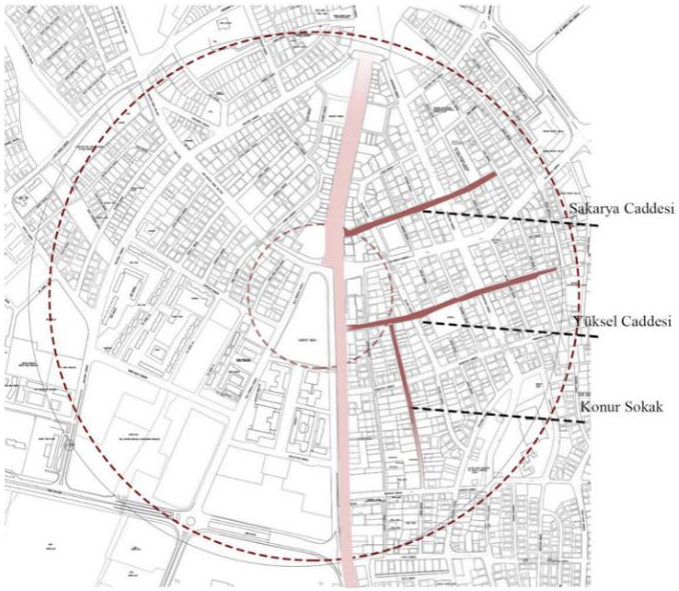


Figure 9. *Pedestrian Flow around the Square after 2000 (Çankaya Municipality 2014 Subdivision Plan, edited by the author) [30].*

One of the notable applications in Kızılay Square was the closure of the square's perimeter with barriers in 2003. The barriers were placed to halt pedestrian flow and direct people to use the underpasses, a recent implementation [19]. In addition to this redirection, traffic regulations were enforced on the vehicle roads. According to the decision made by the Ankara Governorship City Traffic Commission, the intersection in the square was closed to traffic, the parallel roads on Mustafa Paşa Boulevard and Ziya Gökalp Boulevard were rendered unusable and pedestrians used the metro underpasses located in the square. It was planned to demolish the SSK Business Center in Kızılay and build a smaller-scale municipal building in its place, turning the remaining area into a square [31]. The project details proposed by the Çankaya Municipality included demolishing the structure and building a new one with a smaller footprint but higher in height, and organizing the area in front of the structure as 'Emek Square' [31]. Disputes between local governments also occurred over this particular project and as a result of the objection from the Ankara Metropolitan Municipality, the project could not be realized [31].

In 2005, Emek İşhanı, a building located in the square and significant in terms of architectural history, was privatized by the state. It was purchased by Talip Kahraman Construction Company in 2006 and renamed Kahramanlar Business Center in 2015 [22]. One of the most significant developments of the period was the opening of the Kızılay Shopping Center, designed in 1979 and whose construction took many years, in 2011. The building, designed by Affan Yatman in 1980, was at the center of discussions for many years due to its scale, location, and the spatial transformation it would create. The construction began 13 years after it was designed, in 1993. The visuals of the mentioned spatial implementations related to the square are provided in Figure 10.

Figure 10.a. *Public Transport Stop in Güvenpark [32],* ***Figure 10.b.*** *barriers in the square [32],* ***Figure 10.c.*** *Kahramanlar Business Center (Emek İşhanı) (from the author's archive)*

Figure 10.d. *Kızılay Shopping Center Figure (from the author's archive)* ***10.e****. Metro masses in Güvenpark (from the author's archive) (from left to right)*

4.4.2. Social Movements in Kızılay Square After 2000

When examining the demonstrations held in the square during this period, the strike on December 1, 2000, stands out prominently. Following this strike, various mass demonstrations were organized under the leadership of KESK in May and June 2001. These protests were fundamentally driven by the legislation concerning unions that unite public employees which restricted the rights to collective bargaining and striking, thereby hindering unionization efforts [34]. The protests led by KESK continued throughout 2001, and according to the Emek Platform Documents, a sit-in was held in Güvenpark on November 9-10, 2001, followed by a rally in Kızılay Square on November 11, 2001 [35].The largest and longest-lasting mass demonstration in Kızılay Square after 2000 was the Tekel worker protests, which aimed to prevent the privatization of the Tekel Tobacco Factory. These protests, which lasted for 78 days, were among the largest mass protests that spread across the entire country [34]. The Gezi Park Protests of 2013 began in Istanbul, spread to Ankara and Izmir and then reverberated throughout the entire country. The demonstrations held after 2013 have been smaller in scale, focusing on issues such as women's rights, environmental activism and the rights of social groups. Since 2000, dozens of worker actions including strikes, walkouts, sit-ins, and marches have taken place in Kızılay Square (Figure 11).

Figure 11. *2010 Tekel Workers' Resistance [36]*

4.4.3. Evaluation: The Impact of Social Movements on Spatial Formation Aafter 2000

Since 2000, Kızılay Square, in its transformed state, has shifted from being a political public space to a chaotic area entangled in large-scale urban development and serving as a major traffic node. The majority of social movements in Kızılay Square occurred predominantly between 2000 and 2010. Spatial interventions such as barriers and metro masses in the square have influenced the scale and frequency of these social movements. Analyses of the role of the social movements of the period in the spatial transformation of the square are provided in Table 3.

***Table 3**. Analysis of the Effects of Social Movements on the Spatial Formation of Kızılay Square after 2000*

<table>
<tr><th colspan="2">Spatial Formation After 2000</th><th colspan="2">Social Movements After 2000</th><th>The Effect of Actions on Spatial Formation</th></tr>
<tr><td rowspan="5">Macro Scale Urban Change around the Square</td><td rowspan="5">• 2003-traffic arrangement: pedestrian flow to the lower level of the square
• The disintegration of Güvenpark by subway masses</td><td>Date</td><td>Event</td><td rowspan="10">• In response to the increasing labour protests between 2000-2004, the square was enclosed from 2003 onwards and police checkpoints were increased.
• In parallel with the actions between 2000-2004, pedestrian circulation was directed to the lower level of the square.
• The square became a transit route and a traffic node, which led to a decrease in protests.</td></tr>
<tr><td>• December 1, 2000</td><td>• Work Stoppage</td></tr>
<tr><td>• May 21-26, 2001</td><td>• KESK Action</td></tr>
<tr><td>• August 23, 2003</td><td>• KESK Action</td></tr>
<tr><td>• 2000-2004</td><td>• KESK and DİSK trade union actions</td></tr>
<tr><td rowspan="5">the Square's Perimeter on a Structural Scale</td><td rowspan="5">• 2003- Barriers around the square
• Closure of cultural venues (cinema, theatre, etc.)
• 2009-Kızılılay Square and Surroundings Idea Project Competition
• 2010- 'Emek Square' idea project with the demolition of SSK Workhouse</td><td>• 2010</td><td>• Tekel workers resistance</td></tr>
<tr><td>• 2013</td><td>• Gezi Park Protests</td></tr>
<tr><td>• July 15, 2016</td><td>• Protests after the coup attempt</td></tr>
<tr><td>• 2010 to the present</td><td>• Women's rights, environmental groups, LGBTI+ protests</td></tr>
<tr><td></td><td></td></tr>
</table>

5. CONCLUSION AND DISCUSSION

From 1923 to the present day, the square has gained significance since the 1950s within the context of social movements and has evolved into a political symbol. Social movements that developed as an opposition to the prevailing ideology of the political power and organized as a counter-hegemony were experienced most intensely in Kızılay Square in Ankara. The social movements in Kızılay Square from the 1950s to the present day have been effective in shaping the intervention of political ideology in the space. The mass scale and intensity of social movements have brought about spatial compression, fragmentation and shifts.

Map data were used to compare the square across different periods. From the 1950s to the present, it has been observed that green spaces have decreased, construction has intensified, vehicle traffic has increased, and the square has gradually diminished in size. As a result of this spatial change, a narrowing is observed in the spatial scope of the actions. In addition to the spatial contraction of social movements throughout the process, the change in the physical condition of the built environment in which they occurred has been analyzed. While Atatürk Boulevard was within the impact zone of social movements between 1950 and 1980, spatial shifts were observed between 1980 and 2000. The spatial domain of social movements' impact, which shifted to sub-regions between 1980 and 2000, gradually narrowed after 2000. There was also an increase in the density of buildings in the surrounding context of the square. In Figure 12, Kızılay Square and its surroundings were created using the digital aerial photographs of the General Directorate of Mapping of the Republic of Turkey. The photograph from 1939 for the 1923-1950 period, the photograph from 1976 for the 1950-1980 period, the photograph from 1991 for the 1980-2000 period, and Google Earth data for the post-2000 period were used as the basis. In the 1939 data, the area of impact of social movements was not included due to the unavailability of data. A spatial analysis was conducted for this period, and the information obtained from the findings was processed on the map to analyze the periods from 1950 onward. In the process of mapping, Kızılay Square was designated as the central area due to its

significance as a hub for social movements and urban formations, serving as a focal point for spatial analysis.

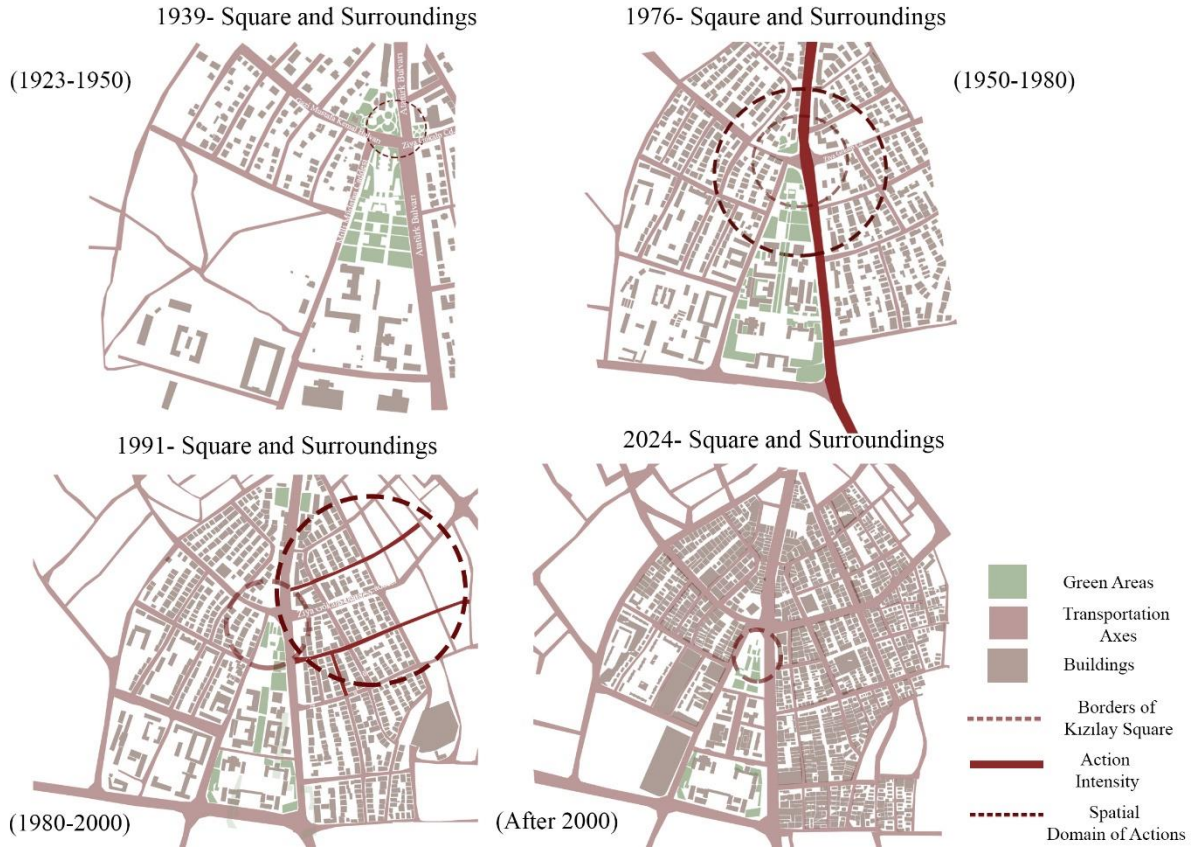


***Figure* 12.** *Analysis of the Spatial Change of Kızılay Square and Social Movements through Mapping Method (Republic of Turkey General Directorate of Mapping Digital Aerial Photographs, edited by the author)*

The social movements in the square did not have a direct impact on the spatial shaping but played a triggering role as a sub-factor. When evaluated in this context, and in parallel with the intensive social movements between 1950 and 1980, an iron line was drawn to the middle refuge of Atatürk Boulevard from 1980 to 2000. During this period, barriers were placed, and the square remained closed to public use for many years due to the metro station project. In parallel to the mass demonstrations that continued between 1960-1964 despite the 27 May coup d'état, spatial restrictions and a ban on demonstrations were imposed after the 1980 coup d'état. Compared to the 1950-1980 period, both the frequency and scale of protests decreased during the 1980-2000 period. While there were over a hundred protests between 1950 and 1980, the number decreased to less than half during the period from 1980 to 2000. Following the intensive protests between 1960 and 1980, efforts to facilitate pedestrian flow through the metro underpass emerged as one of the significant impacts of the protests on the spatial environment. Subsequent to the intensive protests, a portion of Güvenpark was completely closed with barriers between 2000 and 2010. The positive and negative effects of the social movements in Kızılay Square are summarised in Table 4. In the table, social movements are delineated as mass actions, and their positive and negative effects on spatial identity are discussed.

Table 4*. The Positive and Negative Effects of The Social Movements Carried Out In Kızılay Square Related To The Periods*

Kızılay Square	Period of 1950-1980	Period of 1980-2000	After 2000
Mass Actions	• 1960-1964- Anti-government protests • 1960-1970- Protests on student, labour, women's rights and social problems • 1970-1980- Trade union workers' actions	• 1980-1990- Labour Actions • 1990-1993- Prohibition of action • 1993-2000- Spatial shifts in actions • 1993-2000- Trade union demonstrations, commemorations	• 2000-2010- Trade Union Workers Actions • 2010-present- Protests in Gezi Park and after the coup attempt, small-scale actions of social groups
Positive Impacts	• Active use of the square as a mass gathering space • Gaining political symbolic value of the square	• Maintaining the political symbolism of the square • Continued existence as a place of representation	• Maintaining its political symbolism • Continuity of the status of being the traditional centre of the city
Negative Impacts	• Closing the square to mass gatherings and meetings after the protests	• Becoming a control area as a result of the prohibition of action • Weakening of social and individual practices	• The square ceases to be a safe area • Increased barriers and police control • Weakening of social practices

Beyond the existing studies in the literature, this research is differentiated by encompassing a wide range of dates and employing a two-stage data analysis that addresses both spatial and social practices. Additionally, it is aimed at elucidating the relationship between actions and spatial form as a result of these investigations. The study is intended to contribute to the studies to be carried out on the basis of the relationship between urban space-social practices, space-action.

In conclusion, since the establishment of the Republic, Kızılay Square has consistently served as the most significant public space and site of representation within the city. Social movements have established Kızılay Square as a political arena, and in parallel, political power has intervened to assert its influence and ideology within this space since the 1950s. In all three periods, the square was reproduced with contemporary ideologies by both social power and political power. In this context, in the 1950-1980 period, Kızılay Square became a political symbol with the frequency and quality of labour and student protests. During the 1980-2000 period, Kızılay Square fell under the hegemony of power due to the intensification of spatial practices and interventions, while the spatial effects of the protests from the previous period were also observed. From 2000 onwards, the mobility of protests decreased dramatically. Due to the changing social and political structure, Kızılay Square transformed into a commodity and a means of surplus value, losing its function as a gathering and organizing space for protests. The Square experienced the most intense period of social movements between 1960-1990. Although it cannot be claimed that the protests had the power to directly transform the space, the political function that Kızılay Square acquired enabled political power to alter the space in various models to render its ideology and dominance visible. Ultimately, this process clarified that the square has become the passive recreation area it is today. Today, despite having suffered physical damage, Kızılay Square remains socially significant as a communal space and a site of representation for Republican Ankara.

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Systematical Assessment of Damages Occurred in Historical Stone Bridges

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Abstract

Historical bridges constitute one of the building groups that encounter intense problems in protecting cultural assets. While many problems due to atmospheric conditions are observed in idle samples, both natural and human-made problems can be detected on bridges that are heavily used or located in urban settlements. These structures are exposed to more shock and load due to the change and transformation of the vehicles used in transportation. In addition, they experience an intense process of change and deterioration due to construction activities, disasters and unqualified additions. Within the scope of this article, the changes and deteriorations detected in historical bridges were systematically examined; solution suggestions for these deteriorations are presented.

1. INTRODUCTION

The first known rules and prohibitions regarding the protection of immovable cultural assets were imposed in the Greek civilization within the scope of protection of special / unique buildings, city beauties, or property rights [1]. Afterwards, the concept of conservation transformed into the protection of various movable cultural assets by keeping them as exhibition objects, the protection of rich and valuable parts of certain buildings, or the protection of needed structures. This transformation process only ended with the emergence of modern restoration theory at the Athens Conference on the restoration of historical buildings in 1931. At the 2nd Congress of Architects and Historical Building Experts held in 1964, the Venice Charter was revealed, and the concept of contemporary restoration was announced to the world, which is accepted today. To date, all of the documents created as a result of the work carried out by ICOMOS (International Council on Monuments and Sites), COE (Council of Europe) and various international organizations are based and diversified on this primary document. All these documents support approaches that preserve original features within the scope of conservation criteria, eliminate the problem with minimal intervention, reversibility of the intervention, and multidisciplinary scientific studies. These criteria should be followed in all steps to be taken during the restoration process.

Cultural assets deteriorate and become damaged both naturally and consciously or unconsciously by humans. For this reason, occasional intervention is necessary to address and resolve problems. Interventions should be kept to a minimum in order to preserve the original features within the scope of contemporary restoration theory. In this context, joint studies are carried out with different disciplines. Historical bridges, due to their location, constitute one of the groups where these problems are experienced most intensely.

Bridges are structures that built to provide transportation between two facet. Abutments of the bridge are positioned along the stream, for in some cases they are directly in the stream. Consequently, they are more exposed to the damage caused by water, and this creates additional problems compare to cultural assets. Furthermore, examples of alterations and deteriorations that occur on roads that are currently in use include

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the superstructure, infrastructure, and heavy vehicle traffic. In unutilized samples, problems are encountered due to intense exposure to atmospheric conditions.

Within the scope of this article, the changes and deteriorations that occur specifically in historical bridges are examined. Additionally, the interventions made for these deteriorations are summarized and systematically evaluated. Upon reviewing the studies on the subject, it has been determined that studies on historical building damages and interventions to reduce them are quite rare. Some of the studies that included in the research demonstrate the damage and interventions to the structure within the framework of the restoration of buildings [10, 21, 22, 23]. One of the buildings was prepared as an application guide [20], and some of them was specialized in the context of earthquake or static problems. [7, 11, 24]. There are very few publications directly related to the subject, including one article [8] and two conference papers [9, 12].

2. FACTORS CAUSING DETERIORATION IN MATERIALS AND STRUCTURE

The factors causing deterioration in materials and structures will be examined under four main headings: atmospheric conditions and natural factors, biological causes, natural disasters, and human-induced causes, as illustrated schematically in the table.

Table 1. *Factors Causing Deterioration in Materials and Structure*

Atmospheric Conditions and Natural Factors	Biological Causes
Natural Disasters	Human Causes

2.1. Atmospheric Conditions and Natural Factors

The building material are directly affected by the atmospheric conditions and natural factors, and these factors, depending on the climate zone and location of the building, cause deterioration. Sunlight, air, water, temperature, humidity, and wind can be counted in this context.

Air, whose main components are hydrogen (78%) and oxygen (21%), causes deterioration in building materials with dust and acidic gases [26]. These gases are generally concentrated in industrial and urban centers where air pollution is intense. Acidic gases such as carbon dioxide and sulfur dioxide react with stones and cause accumulation on stone surfaces [2]. This formation, called black accumulation on the surface, can be named "Soiling", "Compact Black Deposit", "Dendrict Black Crust" and "Calcereous Concretion" depending on its density [13]. Black accumulation on the surface is especially common in building stones consisting of carbonate rocks. This crust consists of gypsum formed by carbonate minerals and sulfur dioxide (SO2) reactions. It also causes a negative appearance in terms of aesthetics. Concentration leads to a reduce in the perception of details by covering fine lines and gaps [3, 13]. As a result of the expansion of urbanization and the development of industry over time, many bridges that constructed outside the city have remained in the city limits. Therefore, the supports of ancient stone bridges have deteriorated due to exposure to acids, especially gases. This shell breaks off from time to time under the influence of water, causing loss of sections in the stones (Fig.1a).

Water influence spoilage in many ways: In addition to the damage caused by rain, snow, ice, and groundwater, the moisture in the building stones increases gradually since the piers of historical bridges are constantly in the water.

Furthermore, water can enter the building through the details at the material junction, inadequate insulation, or damaged parts resulting from neglect [2]. It is known that rain and snow penetrate deeply into the porous material, causing various chemical reactions within the structure. Croci states that as a result of this chemical reaction, acidic water will affect sedimentary stones and sandstone, leading to the formation of clayey material. [4]. Salinization, efflorescence, frost-induced deterioration, and micro karstic formations can be seen as water progresses through the stone.

Salinization is the dissolution of sulfate, nitrate, and chlorine-containing salts. It occurs through the condensation on the surface of certain stones as water evaporates. These salts, which recrystallize on the surface, appear as white stains on the stone surface [2, 5]. Similarly, efflorescence occurs when the salt dissolved in the water. The pores of the stone accumulate efflorescence as the water evaporates. As the salt molecules accumulate in the pores, pressure is created. The pores of the stone crack, and its structure deteriorates, eventually they can be detected as blisters on the stone's surface [26, 6]. In bridges that are constantly exposed to water, this type of deterioration can be seen in many examples. They are generally detected locally and regionally, with a higher concentration under the arches of bridges and inside the vaults (Fig.1b). Deeply penetrating water that freezes in the stone causes to an increase of the frozen water's volume; the pressure created for this reason causes deformation and dissolution. Especially in the case of existing cracks, water freezes in these cracks, and this leads to increase in volume. Moreover, increase in volume causes cracks to widen and profile losses [2] (Fig.1c). Microkarst formations, on the other hand, are a situation where the calcium carbonate (CaCO3) mineral melts when it encounters with water in the structure of the stone and leaves a perforated surface in its parts [5]. In addition, another problem caused by the water that contained in the stone is that it creates a suitable environment for mold, fungi, and algae [2].

One of the biggest problems caused by water on bridges is the changes in the ground level due to natural causes that occur over a long period. Depending on the stream's natural regime and the river basin's hydrometeorological status, changes in the base level are observed in continuous or periodic periods. These changes cause balance problems and lateral erosions on the slopes. Another problem caused by rivers is the scour around the piers due to the increase in foreign materials rubbing on the piers. This problem may cause the bridge to collapse and the foundation to settle over time [7] (Fig.1d).

Figure 1. a) *Büyükkarıştıran Bridge (Kırklareli)[23],* ***b)*** *Kalender Bridge (Diyarbakır)[25],* ***c)*** *Karabıyık Bridge (Yozgat)[25],* ***d)*** *Behramkale Bridge (Çanakkale)[19].*

2.2. Biological Causes

Animals, plants, fungi, insects, and bacteria are the primary agents of biological degradation. Animals cause damage to bridges by removing or gnawing building materials. In addition, acids and salts found in animal feces can cause chemical deterioration on stone materials. Similarly, various fungi feed on minerals such as calcium, aluminum, iron, and potassium causing chemical degradation in both the stones and the binder between the stones. [2, 9].

Similarly, when the seeds enter the tiny holes on the bridge germinate, the growing roots affect the structure mechanically and chemically. Roots growing, especially in the joints between building stones, cause the mortar to break and erode over time, leading to cracks and breakage in the stones; Therefore, it causes structural losses (Fig.2a). However, the acids secreted by plants through their roots as they grow can react chemically with the materials and damage their structure [26].

2.3. Natural Disasters

Natural disasters are factors that are unknown; and they can unexpectedly result in severe destruction to historical buildings. Within the scope of natural disasters, the two most important disasters that have a negative impact on historical bridges can be considered as floods and earthquakes. Since bridges are built over streams, they receive the most damage during floods. The damage appears primarily in the flood wounds on the flood splitter (selyaran) part of the abutment or directly on the abutment themselves. Depending on the flow rate and the amount of material it contains, flood disasters cause damage such as cavities and movements in the abutment, superficial or holistic damage to stone surfaces, or loosening of joints. In addition, another effect that has a negative impact on bridges during the flood process is the dynamic effect that occurs as a result of the materials carried by the flood hitting the bridge piers. Rock fragments, which usually occur as a result of landslides, hit the piers and deck at high speed. They have a significant destructive effect. Another negative effect of the flood is the buoyancy force exerted by the suddenly rising water level on the deck. [7]. If the pushing force of the water overcomes the shear stress and occurs at the base of the abutment, effects such as slipping, sitting or turning are also observed on the abutment [8] (Fig.2b). The red line shown in figure refers to the historical bridge that was destroyed in the flood. The piers of the reinforced concrete bridge, which was built right next to the historical stone bridge, narrowed the flow section of the water. Also, during the flood disaster that happened in the region, the historical bridge was completely destroyed in consequence of the precipitation, which was carried into the stream bed, colliding against the abutments.

Another disaster that negatively affects historical bridges is earthquakes. Bridges built with stone material with high resistance to compressive stresses under vertical loads, but they can be damaged under horizontal forces caused by effects such as earthquakes (Fig.2c). For centuries, metal elements that can absorb tensile forces, such as tensioners, clamps, and tenons, have been used in many masonry structures to resist horizontal forces [10]. In bridges, the formation of outward rotations in the spandrel walls (tempan) and emptying the fill, along with the lost facade wall, are common occurrences in earthquakes. It is thought that the collapse of the facade walls is caused by the infill wall interaction [11]. However, one of the points where earthquake damage is most intense is the arches. Cracking and openings, especially in the main arch stones with large spans or along the middle axis of the bridge, are among the causes of earthquake damage [8].

Figure 2. a) *Konarı Bridge (Karabük) [25],* ***b-1,2)*** *İkiçay Bridge (Kastamonu) [25],* ***c)*** *İkizdere Bridge (Aydın) [25]*

2.4. Human Causes

Reasons such as faulty design, faulty use and repair, contemporary life activities that transform the natural and artificial environment into harmful conditions, fire, vandalism, installation additions, and tourism can be listed as causes of human-induced changes and deterioration affecting buildings.

Mistakes made within the scope of the design and location selection principles of historical bridges have increased in recent years due to various factors. These mistakes inevitably cause problems on bridges. Wrong location selection in bridges, differences in the ground, stream characteristics, or flow rate are important criteria that affect the bridge's durability. Yanmaz states that problems are encountered if there is an error in the positioning of the bridge piers [7]. For example, the fact that the middle piers are positioned in the large speed zones in the opening is an important factor that causes undermining around the abutment. Similarly, the large number of piers is a factor that causes the gap between the piers to be filled with material, thus results in an increased flow rate in the narrowing gap, which in turn causes scouring at the bottom and increasing the headwater water level [7].

Choosing the wrong material for bridges also causes serious consequences. In this context, problems caused by facing stones constitute a significant percentage. Stones referred to as facing stones in the literature are cut stone blocks that are present on the outer and inner surfaces of the double-walled stone masonry and form the facade. The water absorption value and void ratio of these blocks, which form the façade of the bridge and have a direct relationship with water, is an issue that requires conscious selection. Drainage is critical as removing water without damaging the structure affects its stability. Weakness of the coating and drainage system may cause surface water to leak into the filling part of the bridge and cause the filling material to crumble over time, undergo chemical and physical deterioration, crumble and fall out, and cause voids to form within the filling. Water leaking into the fill may cause expansion during temperature changes and directly affect the material strength under freezing and thawing. The clayey mixed with the filling

material can expand with the water leaking into the filling and put pressure on the facade walls [10] (Fig.3a, k).

Among the causes of degradation caused by humans, activities aimed at or indirectly affecting the riverbed have an important place. These problems, which arise within the scope of various zoning and settlement activities as well as rehabilitation activities on lands opened for development, lead to important consequences such as the bridge remaining idle or collapsing. In this context, changing or restricting the stream bed is important. Changing the stream bed increases the flow rate by causing the amount of water to pass through a narrower section [9]. In addition, comprehensive interventions that change the water flow regime in the stream bed also damage the bridge. The constructions built around the bridge also narrowed the section and changed the water regime. Changing the water regime causes sediment accumulation or unbalanced load on the abutments. Removal of bridge base material within the scope of various other constructions, similarly the increase - decrease or drying of the flow rate of the stream due to Hydroelectric Power Plant (HEPP), dam construction and similar reasons, and increase in basin sediment yield due to negativities in land use are also among the negative effects. The decrease in base level is on the downstream side; the decrease in water causes increased bottom erosion from the source side. Sediments increasing in the water cause scouring around the bridge piers and support settlement at the base. Changes in the river bottom and thalweg elevation (river bottom level) can lead to hollowing out of bridge piers, loss of foundation materials, and the emergence of wooden piles. Narrowing the stream passage by filling the riverbank increases the flow rate, and the amount of material dragged due to turbulent currents. This results in scouring in the piers. Soil withdrawal from the river bottom also creates turbulent currents and damages the abutment (Fig.3b-1,2) [12].

Additions and interventions made to historical bridges as a result of improper practices over time are also among the factors that accelerate the deterioration process of the structures. In this context, the use of bridges for installation purposes, additions made on the bridge to facilitate vehicle-pedestrian passage, and asphalt applications poured come to the fore. Plumbing pipes placed across the stream, meant to be fixed on historical bridges, create a situation that accelerates physical and chemical deterioration, regardless of their content. Especially since they are on one side of the bridge, they create a statically unstable situation and bring additional load to the bridge (Fig.3c). Similarly, within the scope of contemporary living conditions, another overload situation faced by historical bridges on highways is pouring asphalt on the bridge and adding railings. This situation not only creates an additional load on the bridge but also causes irreversible damage to the bridge since it is added with the help of converted elements. However, reinforced concrete extensions, which were built to expand the historical bridge, are incompatible with the bridge's texture, material and static condition, even though these are the most commonly used extension elements (Fig.3d).

Bridge arches, which still operate smoothly today, continue to carry more than the loads foreseen at the time they were built, thanks to their compressive force carrying capacity, stone material and arch form. However, the load increase on the fill may cause swelling and collapse of the facade walls. In addition, as a result of the horizontal forces occurring in the arch stones due to overloading, separations are also observed in the arch vaults, and these are within the scope of the problems that occur as a result of overloading. Changing the slope of the original bridge is a common practice to ensure easier access to contemporary living conditions and integration into modern transportation systems. Changes are made to ensure more accessible connections between ring roads and bridges and to enable more comfortable passage for vehicles may cause deterioration on the structure. Changing the bridge slope imposes new backfill loads on the arches (Fig.3e). However, the dynamic effects of vehicle traffic passing over it may cause damage to the arches and/or abutment. In this context, in addition to the vibrations and loads created by heavy traffic and heavy tonnage vehicles passing over the bridge, situations such as wear and tear on the original structure may also occur (Fig.3f).

Another problem is that the practices implemented, even if well-intentioned, towards the changes and deteriorations that have occurred over time need to be fixed. In this context, there are many examples of changing arch openings or disrupting their geometry. This situation not only disrupts the original structure

but also creates static instability. Changing the arch form causes the thrust line to become more unfavorable than the ideal arch curve [9] (Fig.3g).

The use of inappropriate materials is also considered within the scope of faulty practices. Not using suitable materials for building and binding mortars is among the most common repair mistakes. When choosing a building material, stone should be selected by bearing in mind that the physical characteristics of the original material, the strength and self-weight of the material, the void ratio, capillary water absorption value and chemical content, environmental conditions, and its relationship with other building materials. If these criteria are not met, an imbalance in the stiffness distribution will occur due to the difference in strength, resulting in regional damage [9].

As in many traditional structures, improper application of the details used to connect structural elements in bridges can lead to various damages. Vertical and horizontal clamps are used to connect stones in bridges. The clamps are made of iron, and lead is poured between them and the stone as a subsidy. This method prevents the stone from being damaged due to the shrinkage and expansion in the metal in hot and cold weather. Due to errors made in this context during application, cracking, and explosions are observed in the stones; section losses occur over time.

Vandalism is another human-caused problem on historical bridges. Vandalism, which means intentional damage, is one of the problems faced by all cultural assets, including bridges. In this context, writing names and various inscriptions anywhere on the bridge, especially by scratching with a hard object or with spray paint, is one of the most common examples of vandalism. Apart from this, various situations, such as shooting at the bridge or tearing off various materials, may also occur. Similarly, treasure hunting and wars are among the methods of destruction that damage cultural assets and historical bridges. For example, the Mostar Bridge, built in 1566, was destroyed in an attack in 1993 and was restored and opened in 2004. Treasure hunting generally causes damage as a result of the legends circulating about the bridges, as well as the excavations carried out in the foot sections or around the decorated spandrel wall stones. In addition to causing static damage to the bridge, such interventions also cause the bridge to collapse, because timely intervention is not possible (Fig.3h,j).

3. INTERVENTION METHODS, EVALUATION AND RECOMMENDATIONS

There are many types of deterioration encountered in historical bridges. Some of these problems may result in the collapse of the structure if left untreated. There is a need for intervention in many different contexts, starting from the material and moving to a diversified scale within the scope of binding, structure, and environmental effects.

3.1. Interventions on Stone Material

From simple to complex, there are a wide variety of methods within the scope of material interventions. Problems caused by spray paint applications, color change, crust formation, or biological pollution can be considered as problems caused by natural or human-made deterioration on the upper surface of the stone. The stone must be cleaned as part of the solution to these problems.

3.1.1. Cleaning the Stones

The decision must be made for stone cleaning through extensive research on the stones. Hence, testing and binding are both necessary processes carried out in a laboratory environment, and an expert must accomplish the application. When deciding on cleaning with two different methods, Mechanical and Chemical, it is crucial to choose the method that causes the most minor damage and provides the best efficiency.

In addition to the method in which the upper surface is abraded within the scope of mechanical cleaning, cleaning by spraying atomized water and laser cleaning can be considered. In the abrasion method, mechanical tools such as scalpels, brushes, steel scrapers, hammers, and chisels (in rare cases), small electrical tools, or spraying tools are used to abrade the surface. In this method, the upper surface of the stone is abraded until the dirt layer on the stone's surface is removed. Sand, aluminum, micro glass, or various nutshell powders sprayed onto the stone's surface using compressed air or nitrogen to ensure surface abrasion to the desired extent with low and controlled pressure.

In cleaning using atomized water spraying, tiny water drops sprayed with low pressure create a smoke and effective cleaning. This method is preferred because it is very effective, but also less harmful.
In laser cleaning, adjustments are made to ensure that the dirt layer absorbs the laser radiation more strongly than the lower layer, and by removing the dirt layer, the underlying surface is prevented from reflecting the laser beams. It has not found widespread use in Turkey because it is expensive and requires special preservatives. This method is generally used for cleaning metal surfaces.

In chemical cleaning, it is necessary to understand the type of dirt, the petrographic structure of the foot, to which it is attached, and the characteristics of the pollution formations in the area washed by rainwater or in the wells. Chemical cleaners are divided into two groups: alkaline or acids, and they provide cleaning by applying them to a suitable surface. However, they need to be cleaned from the surface afterward. This method can be carried out by washing or applying the poultice by leaving the cleanser on the surface [13].

3.1.2. Interventions for Melting, Splitting and Breaking of Stones

The filling method addresses melting, non-structural cracks, and small-scale discharges in stones. In this context, various mixtures of epoxy resins can be used with pressure tools or simple mechanical syringes.
When pieces break off in the stone, interventions are made in various ways. In this context, if there is a broken piece of the stone, it is possible to adapt it to its place; if not, it is possible to complete this part by using a similar foreign stone, different natural material, or artificial stone. The size of the broken piece is important for the bonding method to be used in completion. While polyvinyl acetate or acrylic resin can be used for small parts, typically strong adhesives like polyester, and epoxy resin are preferred. In selecting the adhesive material, it is essential to have good adhesion and durability, ensuring that it does not lose its adhesive properties over time. It should also not undergo volumetric changes, should be elastic or rigid, and should be mechanically similar to the surfaces to be bonded [27]. However, the imitation method in question is not preferred as it does not last long due to the historical bridges being in water. Instead, a refutation process is carried out at the relevant place.

In cases where the original piece broken off from the stone cannot be found, it is completed with a foreign stone. In this method, the color, texture, hardness, brightness, and composition of the foreign stone to be used for completion must be compatible with the original stone. In order to distinguish the integrated parts of the building from the original part, integration with different materials is sometimes preferred. In such

applications, the renewed part is placed behind or in front of the original surface and is presented in a different color, character, or texture to make it noticeable. Artificial stone (cast stone) has an important place among the different materials that can be preferred. In this method, if the completion is to be made with a decorated-profiled piece, this previously prepared piece is reinforced and glued with steel bars and armatures. However, for large and numerous pieces, stones prepared as precast elements outside the construction site are assembled instead. In the production of artificial stones, they must resemble the original stone when wet and dry, as well as being affected by environmental conditions similar to the original stone. In historical bridges, melting and corrosion are not intervened unless there is a static problem. Sert et al. state that when stones need to be completed, the decision is made with expert opinion, and the appropriate one, among the reinforced or unreinforced completion options, is decided [16].

3.2. Interventions for Ground Reinforcement

One of the most important reasons for the settlement of the abutments of historical bridges is ground deterioration. Geological structure of the ground on which the bridge is located and settlements in the riverbed caused by the loads carried by the bridge, with the influence of the stream, give rise to deep discharges, material losses and serious deformations in the foundation and piers of the bridge over time. In this context, it is necessary to increase the soil strength by strengthening the ground. The methods used for this purpose include raft foundation stone fortification, foundation expansion, pile driving and injection systems. Experts make the decision on which methods to use after conducting the required measurements and modeling [28].

3.3. Interventions for Biological Formations

Joint discharges, cracks, fractures and partial collapses can be considered as problems caused by plants growing into the joints and gaps on bridges. These problems are decided by experts within the scope of intervention for stone material. However, in order to intervene in the problems, the building must first be cleared of plants. In this context, annual or small plants that have grown on the surface are washed with a special medicine, withered, and then cleaned from the surface. After the trees are cut at the point closest to the root, a special chemical is placed in their core areas. Root rot occurs within a certain period of time, and then the rotten roots are removed [2].

3.4. Interventions Regarding Structure

The scope of structural interventions includes interventions to cracks that create structural problems and interventions to ensure structural integrity.

3.4.1. Interventions for Cracks

Three different methods are used in the repair of cracks that occur under impact or structural impact in stone masonry walls and similar bridges: stitching, seaming and injection. These methods can also be applied together according to need.

In the stitching method, the section where the structural crack is located is removed by decaying to a size determined by the expert, and the remaining wall is cleaned and moistened with water. In order to prevent the two sides from opening further, if necessary, the edges of the crack are tied with metal clamps and the gap is filled with suitable material. However, since the historical bridges are in direct contact with water, using metal clamps is rarely a preferred method due to the possibility of metal elements deteriorating in a short time due to moisture and water and the possibility of causing damage to the surrounding area. In the clamping method, both sides of the crack are connected to each other with clamps by placing them in the open gaps and securing them with lead or special adhesives. These seams should be protected from atmospheric conditions by covering them as necessary. In applications on historical bridges, it is generally seen that it is used to connect railings and foundation stones to each other. In the injection method, plastic pipes are placed into the holes opened from both sides towards the crack; the appropriate material is squeezed into these pipes using an injection pump. After ensuring that the crack is completely filled,

necessary covering interventions are carried out. This method can also be used as a strengthening method in sections that cannot be dismantled and are structurally problematic [29].

3.4.2. Empowerment Interventions

Within the scope of strengthening bridges, tensioning, injection, Fiber Reinforced Polymer (FRP) rods, Carbon Fiber Reinforced Polymer (CFRP) tapes or new elements can be used.

The strengthening method with tensioners is used to increase the low tensile strength of stone walls and to connect bent and deteriorated wall connections to the building system. Walls that deviate from the vertical and bend due to factors such as excessive settlement on the ground, excessive or disproportionate loading, are brought into alignment with the help of tensioners and reconnected to the building body. Although wood or metal can be used as tension material, metal is preferred in masonry structures, especially in the context of opening spans [2]. It is not a method used on historical bridges.

FRP rods provide good results in stone masonry walls that have low structural tensile strength. This material, which has low density and compatible mechanical properties, is also resistant to corrosion and chemicals [14, 15]. FRP bar applications are generally made by emptying the mortar between the building blocks and where these gaps exist. Alternative methods are preferred in areas such as historical stone bridges, which are considered to prevent damage to building stones and preserve their originality [2, 4].
CFRP is a fabric-shaped material that, similar to FRP rods, increases the ductility of masonry structures and makes them resistant to tensile. In practice, epoxy is applied to the cleaned surfaces and adhered; it is then fixed by applying epoxy again. Since CFRP fabrics are not fire resistant, it is recommended to protect them with plaster afterwards. This method is widely used in historical buildings, especially in the context of sheathing the problematic wall and increasing the cross-section. However, in this method, the original wall elements that need to be protected are covered in a non-recyclable manner, and concrete material is used. This method is not preferred due to reasons such as the upper surfaces of historical stone bridges being largely unplastered and the epoxy applied to the surface cannot be removed without damaging the original stone material. However, in historical concrete or reinforced concrete bridge reinforcement applications, CFRP windings can be used in cases where reinforcement is insufficient (Fig.) [28].

3.4.3. Reconstruction

Reconstruction is a restoration method that means the reconstruction of buildings or parts of buildings that have serious structural problems and cannot be protected and strengthened economically and effectively by different methods, with original or compatible materials and techniques. This method, which is generally preferred for problems related to arches or piers in historical bridges, appears as a method that requires interdisciplinary work along with serious calculations and analysis [9].

4. EVALUATION AND CONCLUSION

Historical bridges constitute important examples of transportation of cultural assets that have survived from past civilizations. The most basic component of protecting historical buildings and the environment is ensuring that the buildings find a place in contemporary life and that the necessary maintenance is carried out accordingly. In particular, the interventions made on historical bridges both in their direct exposure to atmospheric conditions and in their adaptation to today's living conditions are factors that accelerate deterioration. Atmospheric conditions and natural factors, biological causes, natural disasters and human causes stand out as the most common causes of deterioration in historical bridges.
For these reasons, historical bridges often need intervention within the scope of conservation and restoration. The scope of the intervention varies depending on the degree of damage to the materials in the bridge, and the original material and texture should be adhered to as much as possible during the repair, and the compatibility of the materials planned to be used with the original material in terms of both mechanical and chemical durability and color and texture properties should be investigated.
The main purpose of conservation and conservation studies is to make reversible interventions, if possible, without compromising the originality while solving the problem. For this reason, it is important that

planning studies be carried out seriously in a multidisciplinary manner. In this context, the materials and equipment to be used must be decided under the supervision of experts, starting from a detailed documentation study and determination of the current situation. When making these decisions, it is important to conduct the necessary analysis, calculations and tests, and if necessary, to make decisions after partial tests. It is necessary to determine and diagnose the physical, chemical and mechanical properties of the original materials found in historical bridges, the causes of deterioration, the factors that cause deterioration, and the selection and development of conservation methods to be applied in the light of these. These materials have the quality of documentation because they can transfer the construction technique of bridges, which are cultural and symbolic structures of that city, to the next generations. After the appropriate conservation method is selected among the 'interventions for stone materials, interventions for soil strengthening, interventions for biological formations, and interventions for structure'; the restoration application phase begins. It is also important to constantly monitor the method decided to be applied and to consider and plan alternative methods when necessary.

Historical buildings and bridges are highly affected by intentional or unintentional damage caused by people, apart from natural factors. In the context of short-term methods to prevent intentional harm, increasing supervision and applying punitive action come to the fore. However, providing training in this context in schools at all levels and raising public awareness will ensure much more sustainable results in the long run. Within the scope of unintentional damages, construction activities come to the fore. Bridges on rivers that have been subjected to interventions on their flow direction, flow rate and bed through various construction activities may face serious problems in the long term, if not in the short term. However, irreversible problems occur on bridges over which highways pass, both due to improvement works and unforeseen loads.

For this reason, all institutions and organizations that have a share in planning and development works must be audited; it is important to make conscious, scientific and multidisciplinary decisions and to ensure their implementation by monitoring in the long term. In addition, it is important to make disaster planning for all kinds of structures, including historical bridges, and to create alternative solutions and measures in a multidisciplinary manner.

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Application of Biophilic Criteria in Libraries: Oodi Helsinki Central Library

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Library

Abstract

The design of biophilic spaces that are directly or indirectly integrated with nature is an important requirement in social spaces that affect the mental and physical health of users, such as libraries. Built in 2018 in Helsinki, Oodi Central Library is a building that attracts attention with its biophilic design features. In the study, the evaluation of the building is based on three different approaches developed by Kellert and Calabrese in 2015; direct experience of nature, indirect experience of nature and experience of place and space. The components of the building such as light, air, plants and materials were analyzed within the scope of biophilic criteria and the findings of the analysis were transferred to a table. The biophilic design of the library increases the interaction of users with nature. While this study emphasizes the importance of biophilic design for library buildings, it also serves as a resource to show how biophilic criteria can be used effectively for future designs. In this way, it demonstrates the potential of biophilic design in architecture and interior design and increases the body of knowledge in this field. Ultimately, the study contributes to enriching users' quality of life and learning outcomes by advocating for the wider adoption of biophilic design in public spaces.

1. INTRODUCTION

Today, the places where people spend most of their time are indoor spaces such as homes, offices, shopping malls and libraries [1-2]. This tendency towards closed spaces has brought about a separation from nature [3]. On the other hand, many recent studies have revealed that nature and natural places have positive social, mental, cognitive and physical effects on human health [4-5-6-7-8-9-10]. In this context, biophilic design, developed based on humans' innate biological bond with nature, is gaining importance as the world's population continues to urbanize. This design approach, known as “biophilic design”, encourages the use of natural processes and systems in the construction of built environments [11]. Biophilic design supports the principles of sustainability and environmental responsibility, provides energy efficiency and offers living spaces in harmony with nature. Using the biophilic approach in spaces also provides many health benefits. It can reduce stress, improve creativity and cognitive function, increase well-being, and accelerate recovery [12]. As a result, biophilic design is a sustainable design approach that aims to connect and integrate people with nature to positively impact users [13].

Applying biophilic design criteria in a public space such as a library positively increases both user experience and overall well-being. Thanks to biophilic design, libraries become not only information access centers, but also places where users can rest, renew and work more efficiently. In this context, the aim of this study is to investigate and analyze the presence of biophilic design criteria in the formulation of the Oodi Helsinki Central Library. In the analysis, criteria developed by Kellert and Calabrese [14] and classified as "direct nature experience, indirect nature experience and place and space experience" were used. In this context, the research aims to contribute to the potential possibilities of applying biophilic designs to interior spaces.

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1.1. Biophilic Design Concept and Models

One of the most negative consequences of rapid urbanization is the loss of nature and living elements. This situation both severs people's relationship with nature and creates destructive effects for natural spaces [15]. In this process, the concept of biophilic design developed as an approach to re-establish interaction with nature. In 1984, E.O. Wilson expressed the biophilia hypothesis as the desire to establish relationships with other life forms [16]. According to this hypothesis, there is an organic and instinctive connection between humans and other ecosystems. Biophilia, derived from the words “bio” (life) and “philia” (love), expresses human connection to nature [17]. Biophilic design aims to create healthier and sustainable urban environments by re-establishing the broken relationship between humans and nature. This approach aims to meet people's quality of life and psychological and physiological needs by integrating nature elements into urban spaces.

Biophilic design aims to integrate nature into urban spaces in an active and systematic way. It aims to actively benefit from various elements, changes and processes of nature [8]. The biophilic understanding, which argues that the essence of human beings is connected to nature, is dominated by an understanding aimed at satisfying the human instinct to be exposed to nature and to use it [17]. In the application of the biophilic design approach, natural elements and processes that connect humans to nature constitute the design source [11]. However, the selection of design resources in the built environment is also related to physical, sociological, cultural and economic factors such as the intended use of the building, the scope of the project, economic factors, logistical factors, legal requirements, cultural and ecological conditions [14].

In the literature, studies on biophilic design are produced in different contexts. Studies examining the effects and characteristics of biophilic spaces as restorative spaces are increasing [13-18-19-20-21-22]. Various studies have also been conducted on the applicability of biophilic properties to spaces [23-24-14]. Browning, Ryan, and Clancy [24] developed 14 design parameters that are adaptable and applicable to the design of the built environment, incorporating previous work on biophilic design. The parameters, which they categorized into three categories: nature in space, analogy of nature, and nature of space, are shown in Table 1.

The guidelines created by Browning et al. [24] seek to maximize multidisciplinary accessibility by establishing a common vocabulary, offer a precise and consistent terminology for biophilic design, and employ a variety of concepts to characterize biophilia and biophilic design.

Table 1. *Biophilic Design Criteria [24]*

Nature in the space	Natural analogues	Nature of the space
Visual Connection with Nature	Biomorphic Forms & Patterns	Prospect
Non-Visual Connection with Nature	Material Connection with Nature	Refuge
Non-Rhythmic Sensory Stimuli	Complexity & Order	Mystery
Thermal & Airflow Variability		Risk/Peril
Presence of Water		
Dynamic & Diffuse Light		
Connection with Natural Systems		

Kellert and Calabrese [14] stated that biophilic design practices consist of two different design strategies called experiences and qualities. The parameters they categorized into three categories as “direct experience of nature, indirect experience of nature and experience of space and place” are given in Table 2. In the categorization developed by Kellert and Calabrese [14], “direct experience of nature” refers to a direct connection with environmental features such as air, natural light, plants, water, animals and landscapes. “Indirect experience of nature” refers to exposure to certain patterns and processes such as pictures, natural materials, decorations inspired by shapes and forms occurring in nature, wealth of information, natural geometries, symbols of the natural world. “The experience of space and place” refers to spatial features characteristic of the developed natural environment [14].

Table 2. *Biophilic Design Criteria Presented by Kellert and Calabrese [14]*

Direct Experience of Nature	Indirect Experience of Nature	Experience of Space and Place
Light	Images of nature	Prospect and refuge
Air	Natural materials	Organized complexity
Water	Natural colors	Integration of parts to wholes
Plants	Simulating natural light and air	Transitional spaces
Animals	Naturalistic shapes and forms	Mobility and wayfinding
Weather	Evoking nature	Cultural and ecological attachment to place
Natural landscapes and ecosystems	Information richness	
Fire	Age, change, and the patina of time	
	Natural geometries	
	Biomimicry	

2. SCOPE AND METHODOLOGY OF THE RESEARCH

In the study, an evaluation is made based on the biophilic design parameters put forward by Kellert and Calabrese in 2015 [14]. The biophilic design parameters of the building are presented in a table and the applications for the parameters are supported with photographs.

Within the scope of the research, a library building was selected as a case study as a public space where biophilic design criteria can be effectively applied. Oodi Central Library, built in Helsinki in 2018, is a building that stands out with its biophilic design features. Designed by ALA Architects and opened on December 5, 2018, the building is located in Kansalaistori Square in the center of Helsinki. The building is surrounded by many industrial buildings and the Parliament Building. Constructed with local materials in accordance with local climatic conditions, the building constitutes an important public space in Helsinki [25].

Figure 1. *Oodi Helsinki Central Library / ALA Architects [26]*

The three-storey building covers an area of 17,250 square meters. Steel and concrete are used together as the structural system, while glass and wood materials are used extensively on the facade. The square in front of the building, the entrance canopy with retracted organic forms and the terrace area formed on top with the retraction of the entrance transform the building into an important public space in the city [27].

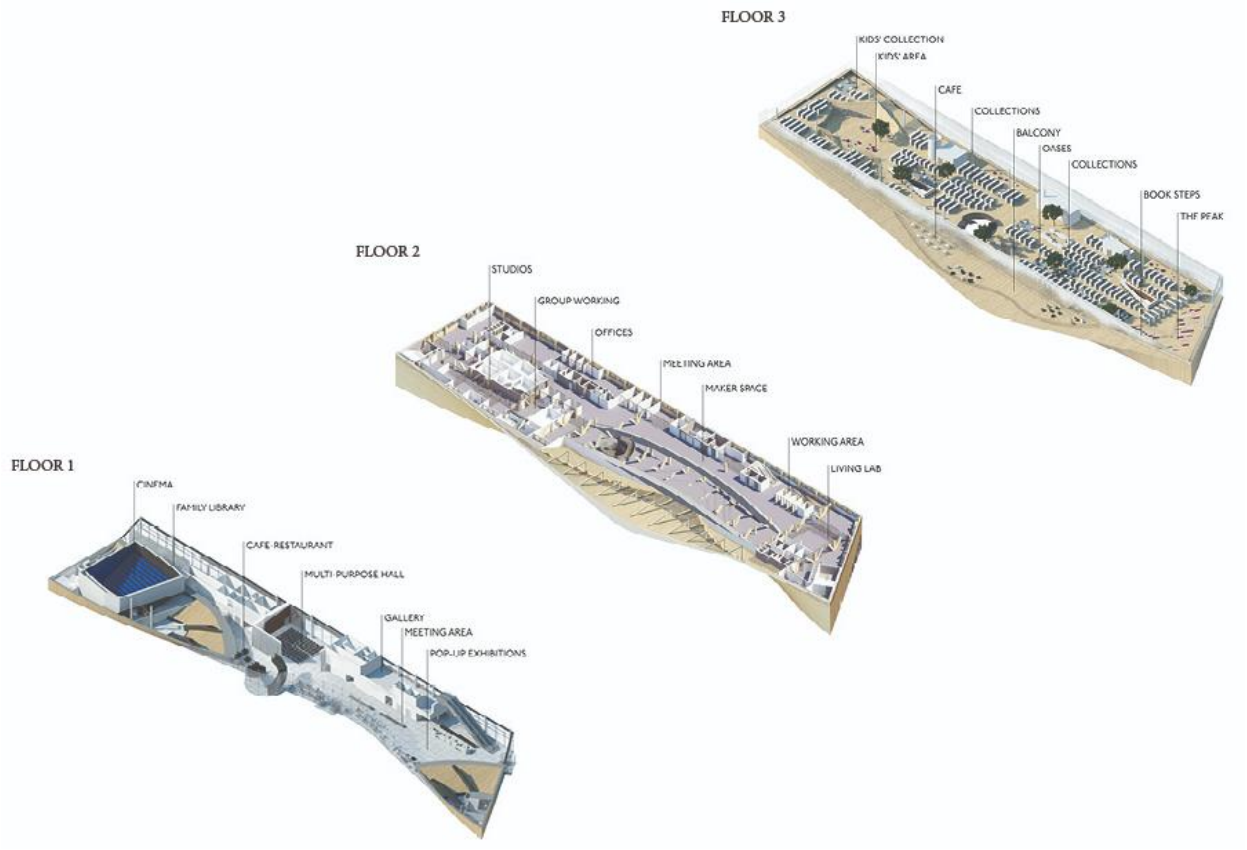


Figure 2. *Library Floor Plans [28]*

Local building materials and regional climate were taken into account in the construction of Oodi library. The building's wooden components were made and assembled on site. The organic façade of the building was developed using algorithm-supported parametric design methods [28].

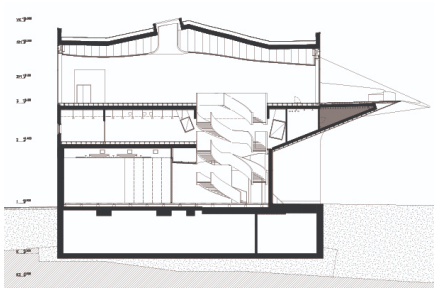
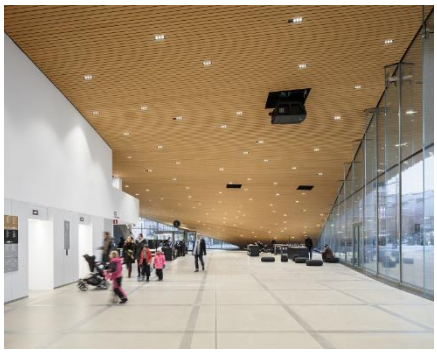
3. EVALUATION OF OODI HELSINKI CENTRAL LIBRARY IN THE CONTEXT OF BIOPHILIC DESIGN CRITERIA

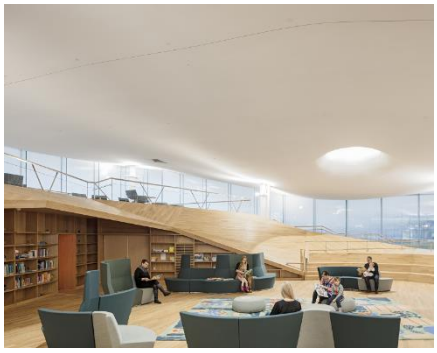
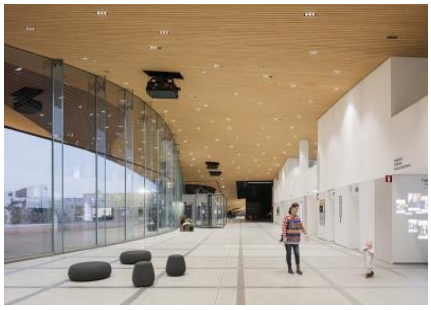
In this part of the study, the biophilic criteria in Oodi Helsinki Central Library were identified and presented in Table 3.

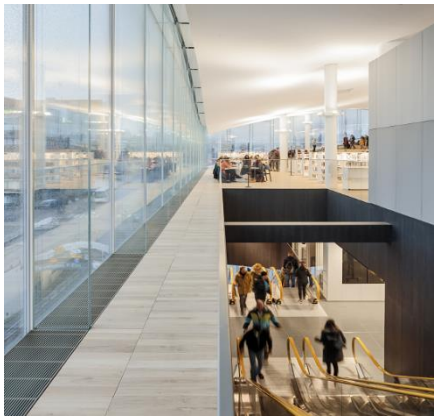
Table 3. *Findings from the Evaluation Context*

Biophilic criteria		**Images of the building**	**Explanations**
Direct Experience of Nature	**Light**		The library's large glass facades and skylights allow daylight to illuminate the interior spaces.

	Air		The library has integrated mechanical and natural ventilation systems. Natural air flow and fresh air circulation are provided to the interior spaces through large glass facades and movable windows.
	Water		Water use was not observed.
	Plants		Indoors, a variety of plants not only provide aesthetically fresh spaces but also improve air quality.
	Animals		No animal use was observed.
	Weather		The library's sophisticated air conditioning systems adjust the indoor temperature based on the outside weather. You can sense the natural cycle of the seasons in the atmosphere this produces. Breathable exterior glass facades and movable windows let in natural light and fresh air.
	Natural landscapes and ecosystems		The library's expansive glass façade and terraces allow the surrounding natural landscape to be brought within. Furthermore, the parks and green spaces around the library help patrons feel more connected to the outside world.
	Fire		The use of fever was not observed.
Indirect Experien	**Natural materials**		The natural materials used in the library (such as wood and stone)

ce of Nature	**Natural colors**		create a warm and organic atmosphere in the interior.
	Natural materials		Natural materials reflect the textures and color tones of the natural world, creating a cozy feeling in home design. The earthy and natural color palette, which creates a tranquil and serene atmosphere, is inspired by these hues.
	Evoking nature		
	Simulating natural light and air		Warm tones and dynamic lighting systems that emulate natural light are used in the interior lighting design. Users may now feel how the light changes throughout the day thanks to this.
	Naturalistic shapes and forms		Nature served as the inspiration for the interior design's organic shapes and curving lines. For instance, patterns and textures found in tree bark and other natural surfaces are incorporated into the design of wooden ceiling panels and wall coverings.
	Biomimicry		
	Age, change, and the patina of time		The building material exhibits changes over time, including color shift, abrasion, melting, and moisture. The library's green spaces and flora lend credence to the concepts of aging and transformation.
	Information richness		

	Natural geometries		The building's overall design and façade feature organic, flowing lines. The facade's dynamic structures and curved shapes are a reflection of the organic forms and movement of the natural world. Natural geometric shapes are widely utilized in interior design for both furniture and accent pieces.
Experience of Space and Place	**Prospect and refuge**		Spaces such as quiet reading corners, relaxation areas with comfortable armchairs and personal study rooms are designed.
	Organized complexity		Building design brings together disparate places and functions. The library's floors each have a unique theme and purpose. There are spacious, open places for social gatherings and classes on one floor and peaceful reading areas on the other.
	Integration of parts to wholes		The library has floors with different functions that are integrated to provide a holistic experience. The transitions between floors allow users to move freely around the space and explore different areas.
	Transitional spaces		Wide and bright corridors, open staircases and elevators allow users to move freely between different floors and areas.

	Mobility and wayfinding		The library is open and spacious, allowing users to move freely. Connections between floors are easily accessible thanks to wide staircases, ramps and elevators. These transition areas are illuminated with natural light and surrounded by large glass surfaces.
	Cultural and ecological attachment to place		The design of the building reflects the cultural values of Finland and blends them with modern architecture. The natural materials used in the interior and the large glass surfaces emphasize the love of nature and sensitivity to the environment.

4. CONCLUSIONS

In the evaluation of the Oodi Helsinki Library in the context of biophilic design criteria, it has been determined that elements of nature and elements of experience are successfully included. Within the scope of direct and indirect experience of nature, natural light, air, plants and natural shapes are effectively integrated. However, elements such as water, fire and animals were not directly observed. In indirect experiences of nature, elements such as natural materials, imitation of natural light and air, natural shapes and forms, and biomimicry were prominently used. However, the presence of elements such as natural associations, richness of information and natural geometric forms were less evident. In terms of the experience of place and space, criteria such as refuge, organized complexity, transitional spaces, mobility and wayfinding are successfully applied. The library offers an environment that creates a strong connection with nature and enriches the user experience.

The use of biophilic elements in library design is important because libraries are public spaces where people spend long periods of time as learning and accessing information. Therefore, the biophilic design approach enriches library interiors with elements such as natural light, vegetation, and natural materials to help users relax, focus, and access information more efficiently. As a result, the use of biophilic design in library environments improves the user experience, has positive impacts on health and well-being, and is recognized as an important step towards sustainable urban development.

As a result, this study can be used as a resource to produce productive, stress-free, healthy and comfortable library designs. In the future, researchers who want to work on this topic can measure user experiences by surveying library users.

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