



Academic Studies in **ARCHITECTURAL SCIENCES**

Editor

Assoc. Prof. Dr. H. Hale Kozlu

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PREFACE

Architectural sciences are the reflection of the process of designing and producing spaces necessary for vital actions. Different disciplines that directly or indirectly affect this design and production process appear as factors that enrich the process. Many different disciplines, such as engineering, sociology, history, archaeology, anthropology, psychology, support the technical, artistic and social aspects of design and production. This versatility connects architecture with a wide range of design areas, ranging from regional and urban planning to industrial products.

Aiming to emphasize the versatility of Architectural Science, this book is fictionalized as a selection representing 5 different themes. For these themes, “*Design Approaches*”, “*Urbanism*”, “*Interior Design*”, “*Conservation of Cultural and Natural Heritage*” and “*Interdisciplinary Studies in the Building Sector*” have been identified.

I would like to thank the authors who have contributed to the work formed by the scope of these themes with their valuable work, the valuable referees who have spent time along with their busy academic work and the staff of the ASOS Education-Consultancy and Livre de Lyon publishing house for their support in the preparation and publication phases.

Assoc. Prof. Dr. H. Hale Kozlu

Editor

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REVIEWING COMMITTEE

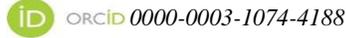
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CHAPTER 1

BIOMIMICRY APPROACHES IN HIGH-RISE BUILDINGS

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1. INTRODUCTION

Nature is a vast source of knowledge that can shed light on design, and as the world's foremost designer, it functions as a model that people inspire and imitate to improve their lives (Bar-Cohen, 2006). Human beings have taken nature as a guide since the moment they existed, and they have produced extremely complex forms and functional solutions, sometimes by observing, sometimes by simulating, and sometimes by imitating 18. The changing and developing social, technological and economic conditions in the century led to the establishment of new cities, the emergence of different job opportunities and scientific developments with the Industrial Revolution. The effects of developments in sciences such as astronomy, physics, chemistry, mathematics, engineering and biology were also felt in architecture. In this period, it was argued that the basis of architecture was in nature, and the movement towards nature and being inspired by nature generally took place in line with the form and structure.

Biomimicry, an innovation discipline that learns from nature, takes the forms, processes and systems of nature, and develops sustainable solutions using the design principles of nature (URL 1), has also guided the design of high-rise buildings. Trend high-rise buildings of the 21st century must be aesthetic and economic structures that do not pollute the environment, produce their own energy, and are in harmony with the urban silhouette. Considering these expectations, plant forms, animal shells, and high-rise structures designed with inspiration from human anatomy imitate nature in time as ecological and sustainable rather than just formal.

Within the scope of this study, in the design of high-rise buildings designed by taking biomimicry processes as an example, plan geometry, mass form, facade and structure were obtained by imitating the physical forms of organisms, and it was determined at what level they benefited from biomimicry by giving examples from sustainable tall structures that

produced their own energy and did not generate waste by taking the functioning of nature as an example.

2. THE CONCEPT AND PRINCIPLES OF BIOMIMICRY

Biomimicry consists of the words bio (life) and mimicry (simulation). The definition of Janine M. Benyus (1997), who first used the word biomimicry, is as follows; It is a new science for problem solving that examines the models, systems, formation processes and elements of nature and uses the information obtained by imitating or inspiring creatively (Benyus, 1997). Biomimicry is an approach to adapting to conditions using systems, processes and methods that nature has already tested. Biomimicry aims to produce effective solutions to scientific problems with the information in nature's memory.

According to Pedersen Zari, when biology drives the design, the application of biomimicry takes place at three levels: organism level, behavior level and ecosystem level. At each level, nature is imitated in different dimensions: form (what the design looks like), material (why design is made), structure (how design is made), process (how design works) and function (what design can do) (Zari, 2007).

Biomimicry should be seen as a method of both formal diversity and performance. It is the application of methods and systems in nature to designs related to engineering systems and modern technology. Biomimicry is also related to architecture as it can address both morphological and behavioral features in subjects such as design, system, method and process (Yeşilyurt, 2008).

3. BIOMIMICRY UNDERSTANDING IN ARCHITECTURE

It is possible to see the movement of orientation to nature, learning and inspiration from nature in many periods of architectural production. This situation has been applied with an analogical approach, which was caused by formal and structural concerns. Today, in addition to these searches, many factors such as the increase of development in the developing technology and scientific fields, the rapid consumption of energy resources, the search for a sustainable design due to the increase in environmental pollution and the rapid progress of global warming, the demand for more economical structures due to the rapidly increasing population rate, have caused the increase of research and application areas and thus this approach has started to be addressed together with many searches. As in many areas, these researches are discussed in architecture with the concept of "biomimesis/biomimicry", which is more inspired by biological systems, to create a sustainable environment, which is briefly

defined as "learning by imitating the best ideas of nature" and progresses towards becoming a new scientific discipline (Gertik, 2012).

Biology, which has inspired almost all fields, has made important contributions to the field of architecture in the production of buildings and built environments at the biomimicry level. In the field of architecture, it shows that awareness has begun to form, especially on form determination, structure and energy efficiency. The use of biomimicry in the field of architecture is the beginning of the transformation to nature.

When the relationship between architecture and biology is examined, there are some benefits provided by biomimicry in the building production process (Gruber, 2011). They are:

- Architectural design for new environments,
- Finding solutions to new challenges based on the models provided by nature,
- Examination of optimized and adapted building traditions inform modern architecture,
 - Better relationships between architecture and living organisms, architecture and environment,
 - Increasing the quality of life,
 - Increasing the quality of the cultural environment (Gruber, 2011).

Sustainable development is brought to a new level where buildings are an integral part of nature and where nature's work is supported rather than interfering with the ecosystem. Under this new order, buildings, outdoor art and other structures function as trees, meadows, flora and fauna that capture, clean and store rainwater, convert solar energy and carbon dioxide into oxygen, protect the soil from erosion, and remove waste. Nature offers great ideas and sources of inspiration to designers for the creation of architecture (Rao, 2014).

4. BIOMIMICRY APPROACH IN HIGH-RISE BUILDINGS

With the emergence of the need for shelter, designer architects and engineers made various buildings using the materials that exist in nature and the methods of nature. Although high-rise buildings are architectural works developed against the increase in population and land prices, the structure, earthquake and wind load, aesthetics, city skyline and energy consumption problems. Biomimicry has been preferred by architects and engineers to solve these problems in parallel with the developments in the Industrial Revolution. Architects sometimes used the process they observed, sometimes the shape of the organism, and sometimes the

functioning of the ecosystem, as a source of inspiration in the design of high-rise buildings. While the high-rise buildings built by taking nature as an example are expected to be ecological, sustainable, functional, stable and aesthetic, the forms and structures that were not even dared to try before were applied by pushing the boundaries of science and material.

Turning Torso is a high-rise building inspired by S. Calatrava's human form in motion (Figure 1). Since the biomimicry level of the structure is inspired by the human form, it can be evaluated as the imitation of the physical appearance, that is, the organism level. Biomimicry structure type is skeleton-like structure (Karaduman Ercan, 2018).

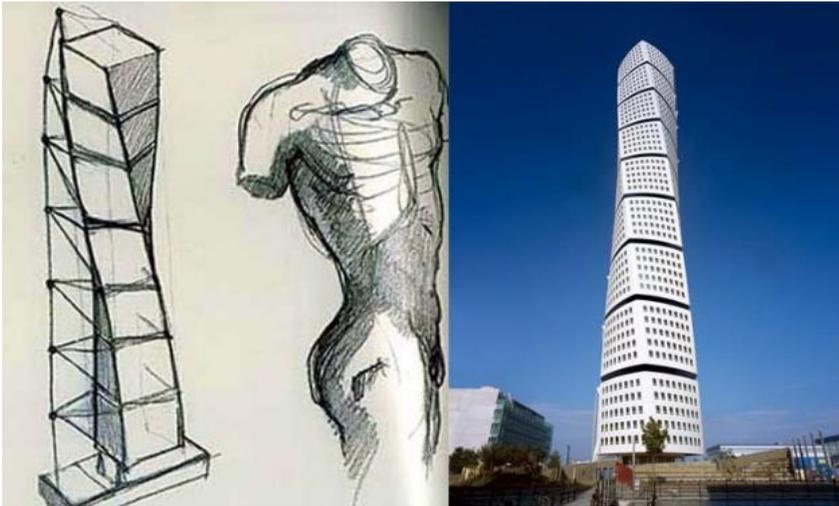


Figure 1: Human form in motion and Turning Torso (URL 2)

The Gherkin Tower is a high rise building inspired by the venus sponge (Figure 2). When Norman Foster designed the building, he was inspired by the exoskeleton of the plant, which resembles a bright and glassy cafe underwater (Karaduman Ercan, 2018).

Since the Gherkin Tower is inspired by the plant form, the biomimicry level is the imitation of the physical appearance, that is, the organism level. The biomimicry structure type is a skeleton-like structure because it is inspired by the hexagonal and layered exoskeleton of the venus plant sponge (Karaduman Ercan, 2018).



Figure 2: Venus sponge and Gherkin Tower (Karaduman Ercan, 2018).

Aldar Skyscraper is a high-rise building inspired by oyster shells (Figure 3) (Mihlayanlar, et al., 2017). The design of the building is based on physical appearance and organism-level biomimicry. The biomimicry structure type of the building is the shell-like structure (Karaduman Ercan, 2018).



Figure 3: Clam shell and Aldar Skyscraper (URL 3)

In Mick Pearce's Eastgate Building in Harare, which imitates the process and function at the behavioral level, a more thermally stable indoor space was attempted to be inspired by passive air conditioning and temperature regulation of the white ants (Figure 4). White ants have managed to fix their nests at 29 degrees, although the temperature of the

outside environment is much higher (Turner & Soar, 2008). In the Eastgate Building, the hot air used by the ants in their nests goes up and the cold air collapses downwards, with the principle that air flow is formed and the CO2 accumulated in the nest is expelled from the spaces that function as chimneys (Hawken, 2006).

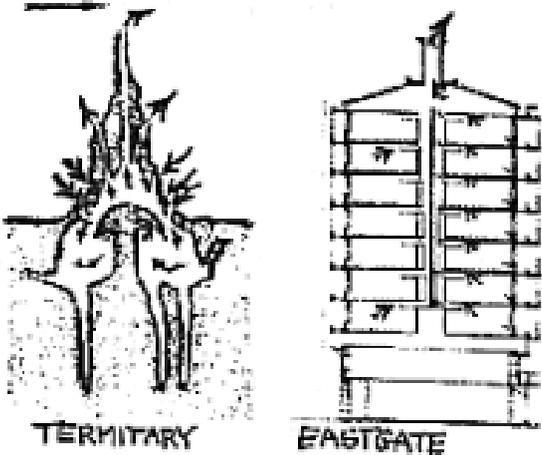


Figure 4: Eastgate Building- White ant-nest relation (Tekin, Kurugöl, 2011)

The use of biomimicry in the design of The Council 2 Building (CH2) is at behavioral level. The west facade of this high-rise building is inspired by the trees that soften the external climate. The north and south facades are inspired by the tree's bronchi. These were applied as wind pipes and air ducts were allowed on them (Figure 5) (Webb, 2005).

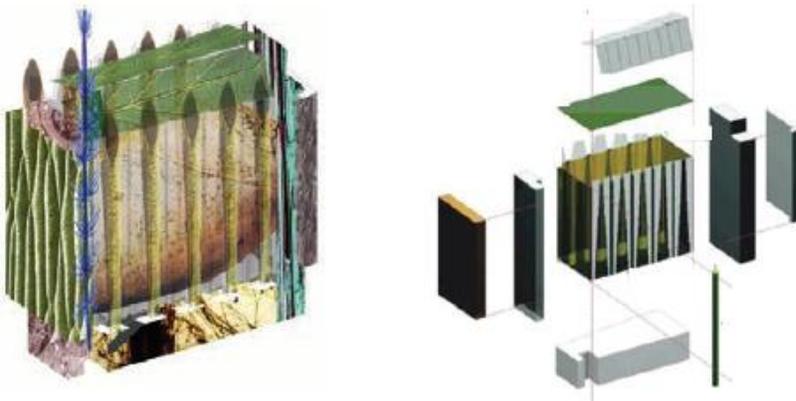


Figure 5: The Council 2 Building (CH2) and tree branches (Radwan and Osama, 2016)

Dragonfly Vertical Farm; this amazing urban farm concept, modeled after the wings of a dragonfly beetle, was designed as a precaution against food exhaustion and famine (Figure 6). Designed by the Belgian architectural group Vincent Callebaut for Manhattan, the Dragonfly project includes offices, research laboratories, public housing, and communal areas orchards, farms and production areas. A plant and animal farm is organized along the dragonfly's steel and glass wings to properly maintain soil nutrient levels and reuse biowaste. The spaces between the blades are designed to take advantage of solar energy by collecting the warm air in the winter. Cooling in summer will be facilitated by natural ventilation and evaporation from plants (Mirniazmandan, Rahimianzarif, 2018).

The tower is like a real living organism, self-sufficient in water and energy, and propagating plants. It can be recycled with continuous feedback without losing anything. In this respect, Dragonfly Vertical Farm can be accepted as imitating the ecosystem (Figure 7).

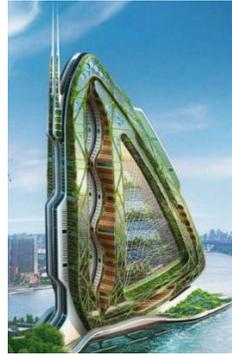


Figure 6: Dragonfly (URL 4), Figure 7: Dragonfly Vertical Farm (URL 4.)

Pearl River Tower, Skidmore, Owings & Merrill (SOM) have taken the structure of the sponge that can absorb tons of water and organisms into it and used this idea to consume less energy in their designs (Figure 8). This porous tower, which has a biomimicry approach at the behavioral level, has four air-tipped holes and electricity is produced from the high wind in these holes. The glass outer shell of the building can obtain energy from the sun thanks to solar energy and photovoltaic systems integrated into solar shading systems. Thus, the energy use of the building has been reduced to 58-60% (Delgado, 2007).

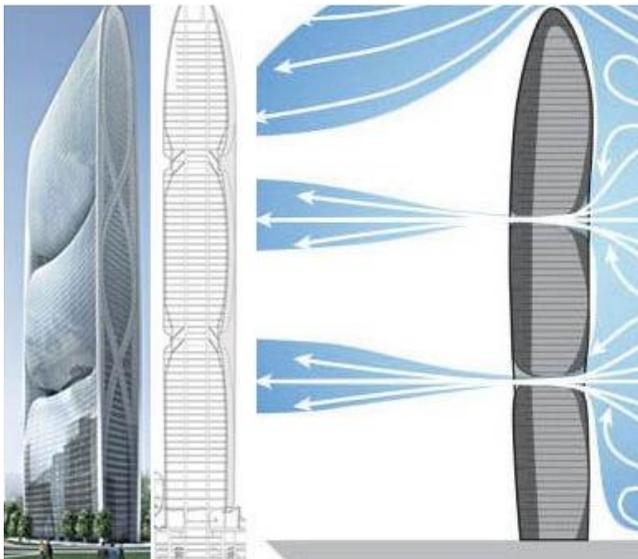


Figure 8: Pearl River Tower (URL 5)

4.1. Findings

The form-biomimicry relationship of the Turning Torso, Gherkin Tower and Aldar Skyscraper, which are among the examples of high-rise buildings described above, has been inspired at the level of the physical

appearance of the organism (Table 1). Turning Torso's mass form and structure are inspired by human movements and human skeleton. The appearance and skeleton of the venus plant were taken as an example in the mass form and structure of the Gherkin Tower. The appearance and skeleton of the oyster shell are imitated in the mass form and structure of the Aldar Skyscraper.

Table 1: Form-Biomimicry Relationship in High-Rise Buildings

Building Name		Turning Torso	Gherkin Tower	Aldar Skyscraper
Year of Built		2005	2004	2010
High (m)		190	180	110
Form-Biomimicry Relationship	Plan Geometry	-	-	-
	Mass Form	Human motions	Venus plant view	The appearance of the oyster shell
	Facade	-	-	-
Biomimicry Approach		Biology-human	Biology-plant	Biology-animal
Biomimicry Level		Organism - Physical appearance and skeleton	Organism - Physical appearance and skeleton	Organism - Physical appearance and skeleton

The design of the Eastgate Building, The Council 2 Building and Pearl River Tower was inspired by the behavior of organisms in the process-biomimicry relationship (Table 2). The interior environment of the Eastgate Building is kept at a constant temperature by utilizing the operation of the white ant nests. On the facade of The Council 2 Building, temperate interior spaces were created, inspired by the trees that soften the outdoor climate. In the design of the Pearl River Tower, by taking advantage of the sponges' ability to absorb organisms and water, they used the air and wind in electricity generation.

Table 2: Process-Biomimicry Relationship in High-Rise Buildings

Building Name	Eastgate Building	The Council 2 Building	Pearl River Tower
Year of Built	1996	2006	2011
High (m)	-	-	309
Process-Biomimicry Relationship	The functioning of the white-ant nest	Functioning of tree branches	How the sponges work
Biomimicry Approach	Biology-animal	Biology-plant	Biology-animal
Biomimicry Level	Behavior	Behavior	Behavior

The design of the Dragonfly Vertical Farm was inspired by the idea of a production farm in the form-biomimicry relationship and the form of the organism in the relationship between function-biomimicry. The structure was inspired by the wings of the dragonfly in mass form, but the

design of the structure was inspired by biomimicry, not only at the formal level but also at the ecosystem level (Table 3).

Table 3: Function-Biomimicry Relationship in High-Rise Buildings

Building Name		Dragonfly Vertical Farm
Year of Built		-
High (m)		600
Form- Biomimicry Relationship	Mass Form	Dragonfly wings
Function-Biomimicry Relationship		Plant, animal and energy-producing farm
Biomimicry Approach		Biology-animal
Biomimicry Level		Ecosystem

5. CONCLUSION

In this study, it has been studied to determine at which levels the high-rise buildings designed by taking biomimicry as an example benefit from biomimicry. Completed in 1996-2011 and varying in height from 110 m to 600 m, these buildings are highly trendy, energy efficient and sustainable with their nature-friendly aspects with their silhouette, plan geometry, mass forms and contemporary structures.

While the search for aesthetics and form in high-rise buildings continues, nature's incorporation of various forms has increased the interest in nature. When architects and engineers resorted to nature for the concern of form, they were influenced by the anatomy and physical appearance of plants, animals and humans at the organism level.

In high-rise buildings, nature is not only referred to with the concern of form, but also the processes of their vital activities are taken as an example by observing how plants and animals meet their basic needs such as breathing, nutrition and shelter. Thus, high-rise buildings have managed to survive by taking advantage of nature without harming the environment such as ventilation, obtaining energy, conserving energy, using water efficiently and not generating waste.

Although it seems difficult and troublesome to benefit from biomimicry at the ecosystem level, not only in high-rise buildings, but also in all types of buildings, it is rare biomimicry levels. In this sense, with the Dragonfly Vertical Farm project, a structure that attracts attention with its mass form and aesthetic appearance, an ecosystem that includes solutions that allow plants and animals to live, and energy is produced. This example shows that taking advantage of biomimicry in high-rise buildings can be realized at every stage and at every level.

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CHAPTER 2

SPATIAL ATTRIBUTES OF SUCCESSFUL INNOVATIVE ZONE DEVELOPMENTS IN CITIES

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OVERVIEW

Integrating creative zones within cities is one of the most critical place making techniques, with cities and regions trying to raise their appeal to the creative community, foster the creative industries, or become 'creative cities.' By using an innovation and art-driven economic development strategy, cities may benefit to capitalize on underutilized assets in the downtown area, and create a welcoming, functional, vibrant space for residents and visitors. The purpose of this case study research was to provide a contextual analysis of multiple successful innovation zones and art and cultural districts to reveal information on useful aspects, strategies, and patterns across cases on creative zones to provide information on the following:

- Identification of innovation zones throughout the world that use art and technology as a catalyst for community and economic development
- Analysis of successful art/technology innovation zones to identify aspects that could be incorporated into urban areas
- Recommendations for creative zones including uses of spaces, businesses that could populate the zone and characteristics that will draw tourists and strategies to encourage tourists to spend more time downtown and spend money at surrounding businesses.

CASE STUDIES

Since the objective of this study was to provide insights into the planning and designing phases of creative and innovative zones, multiple case studies throughout the world were selected to gather descriptive information about the successful projects to identify the common patterns of aspects.

Innovation Zones

In most general terms, *innovation zones* are areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators and accelerators (Katz and Wagner, 2014).

Typically, innovation zones compound the ultimate mix of the following:

- Entrepreneurs and educational institutions
- Start-ups and schools
- Mixed-use development and medical innovations
- Bike-sharing and bankable investments
- Connected by transit

Depending on the circumstances and attributes of geographic area, innovation zones can be grouped under three main models. These are:

- The “*anchor plus*” model: which primarily can be found in downtowns and mid-towns of cities, where mixed-use development is centered around major anchor institutions and a powerful ground of related firms, entrepreneurs and spin-off companies and branches are involved in the commercialization of innovation.

- The “*re-imagined urban areas*” model: which is often found near or along historic waterfronts, where industrial or warehouse districts are experiencing a physical and economic renewal process to outline a new direction of innovative growth. This development type is typically powered by transit access, a historic building stock, and their proximity to downtowns in high rent cities, which is then enhanced with leading research institutions and anchor companies.

- The “*urbanized science park*” model: which is commonly found in suburban and exurban areas, where commonly isolated, sprawling areas of innovation are urbanizing through increased density and an infusion of new activities (including retail and restaurants) that are mixed in contrast to disconnected.

The literature also shows that following factors are crucial for a creating a successful cluster (Ajuntament de Barcelona, 2012):

- Presence of companies which serve as reference in the sector
- Support and presence of the most relevant institutions
- Existence of spaces for small and medium-sized business

- Settlement of universities, continuous education and professional centres
- Active technology centres
- The creation of specific business incubators
- The construction of residences for professionals
- Spaces of exhibition and spreading of the innovation and works of the sectors
- Specific services and spaces for entrepreneurs of every area
- Granting a group of specific services: aids, access to venture capital, networking etc.,

In summary, when an innovation zone is planned, designed and implemented successfully, the potential impacts can be observed through the following benefits:

- Increasing income
- Reducing unemployment
- Retaining residents, stabilizing neighborhoods
- Increasing local population, changing the demographic mix
- Increasing property values
- Attracting more educated people

22@ Barcelona

Founded in 2000, 22@Barcelona is located in the Poblenou neighborhood of the San Martí area of Barcelona. The project has aimed to transform two hundred hectares of industrial land of Poblenou into an innovative district, it has been contributing contemporary spaces for the strategic clustering of intensive knowledge-based activities within a mixed-use development type. This action is also a part of project of urban renovation and a new model of city which is providing a response to the needs and challenges posed by the knowledge-based society. This project can be considered as the most important and successful plan of an urban transformation with a high real state potential and a 180 million Euros public investment of infrastructure plan (URL 1).

The project is unique in terms of land-use and governance issues. Barcelona's City Council passed an urban planning ordinance in 2000 and aimed at transforming the area. Because private entities owned the land, the goal of the ordinance was to *“encourage land-owners to update obsolete urban planning elements from the end of the 19th century while*

maintaining economic activity, which would not have happened with a traditional rezoning from industrial to residential designation” (URL 2).

The district began as 115 city blocks and has grown to 250 blocks of mixed-use development, and is home to several businesses, start-ups and shops. 22@ Barcelona employs roughly 90,000 people and consists of five industry clusters (Greenberg, 2015):

- Information and Computer Technology
- Media, Bio-medical
- Energy
- Design

The coexistence of innovative and dynamic companies with local district ones -shopping, small workshops, and service sector- configure a rich productive fabric. This environment favors the synergy in pro of knowledge and the processes of innovation and allows the improvement of the competition as business group and the quality of life of the citizens that live and work in the 22@Barcelona district. According to 22@, the following factors are crucial for a successful cluster (URL 3):

- Presence of companies which serve as reference in the sector
- Support and presence of the most relevant institutions
- Existence of spaces for small and medium-sized business
- Settlement of universities, continuous education and professional centres
- Active technology centres
- The creation of specific business incubators
- The construction of residences for professionals
- Spaces of exhibition and spreading of the innovation and works of the sectors
- Specific services and spaces for entrepreneurs of every area
- Granting a group of specific services: aids, access to venture capital, networking, etc.

In terms of motivations and actions, Barcelona’s 22@ project was established as a government initiative to re-model Poblenou into an economic center based on innovation and technology. The area’s deindustrialization in the 1990s made space available that the district could benefit. In 2000, Barcelona’s city council approved bylaws for 22

ARROBA BCN, S.A. to develop and execute urban renewal projects throughout the city. In 2001, the city council directed the company to accomplish these activities in Poblenou. The district also made affordable housing and preservation a priority in their plans. Eventually, the district has generated 90,000 jobs, 4,000 units of subsidized housing, and protected 78 percent of historic façades in the area (Greenberg, 2015).

Distinguished Features

One of the most important aspects of the project that led to success is to provide affordable housing. The district has given a lot emphasis and priority to affordable housing and livability. The plan consists of 4,000 new units of subsidized housing, in addition to retaining already existing housing units. New zoning adjustments also have encouraged mixed use development, with the intention of retaining the area active at all hours of the day. 22@Barcelona offers various spaces, for sale or rent, for innovative small- and medium-sized companies or large corporations, as well as flexible transition spaces for developing companies or to help promote a move to the district. Some of the best practices can be summarized as follows (URL 4):

- **Space Search:** 22@Barcelona advises and accompanies businesses through the search process, looking for spaces that meet their individual needs and offering up-to-date information on spaces that are currently vacant, or will be in the near future, in order to help companies, plan their move.

- **22@Barcelona Landing Platform:** High-quality flexible spaces are available for growing international companies, as are transition spaces to ease the incorporation of companies into the district.

- **Weekly and Monthly Spaces:** modular spaces rented by the week or the month, depending on the company's needs. These spaces have shared meeting rooms, wi-fi access and other general services.

Central Keystone Innovation Zone

Central Keystone Innovation zone is founded in 2007 in Pittsburgh, Pennsylvania. The Keystone Innovation Zone program was created by the Pennsylvania Governor Edward Rendell in 2004 to increase the number of high growth jobs in the Commonwealth. Keystone Innovation Zones (KIZs) are designated zones that are settled in communities that own institutions of higher education – colleges, universities, and associate degree technical schools. These zones are intended to foster innovation and create entrepreneurial opportunities by aligning the combined resources (Greenberg, 2015).

The Pittsburgh Central Keystone Innovation Zone (PCKIZ) is comprised of a group of educational institutions, businesses, community-based organizations and government agencies aimed at attracting institutions working in the life sciences information technology and energy sectors (URL 5).

Pittsburgh Central Innovation zone targets the following industries (Generett, 2011):

- Life Sciences
- Information Technologies
- Advanced Materials
- Energy

In order to attract organizations, the strategies that are used are using tax credit and grant programs, internships and student business awards, educational and networking events, and numerous economic development initiatives.

The institutions and organizations' also play a significant role in utilizing the PCKIZ to achieve the goals and mission of the PCKIZ. These partnerships are as follows (McKinney et.al, 2015):

- PCKIZ educational institutions have played a lead role in defining and supporting the economic development and educational initiatives of the PCKIZ. Duquesne University was a co-founder of the PCKIZ. As a co-founder and lead partner of the PCKIZ, Duquesne University took a leadership position in connecting the underserved community that it is located in to the benefits of the Tech Based Economic Development (TBED). Along with Carlow University, Point Park University and Community College of Allegheny College (CCAC), the PCKIZ has led successful efforts to coordinate creative, community focused economic development initiatives.

- The PCKIZ has also helped to regulate and organize high profile economic development initiatives through assisting with fundraising actions and the implementation of economic development initiatives. These projects have included playing a significant role in helping the Hill District Economic Development organizations grant and loan funding from the Allegheny County Department of Economic Development and the City of Pittsburgh Urban Redevelopment Authority for the funding of a full service grocery store.

Distinguished Features

The practices that made the Pittsburgh Central Keystone Innovation Zone (PCKIZ) successful can be summarized with the following (Greenberg, 2015):

- Services for the community: PCKIZ has been instrumental in constructing a grocery store, establishing a Community Based Energy Incubator, and opening a pharmacy to serve an underserved community.

- Community participation and engaging with underserved communities: Maintaining its efforts in the Hill District, Urban Innovation21 altered its focus to Homewood, which is widely considered to be one of the city's most distressed neighborhoods with a high rate of vacant and abandoned properties. PCKIZ officials were in discussions with Homewood community and leaders to decide how to rebuild economic development in their community (Mamula, 2012).

- Education and workforce development: The internship program and focus on student-led businesses ensured that there is workforce development in the community. The pharmacy established by the consortium not only provides low-cost prescriptions but also trains pharmacy students as well (Generett, 2011).

CORTEX Innovation Community

Founded in 2002 in St. Louis, Missouri, the CORTEX innovation zone was previously a privately owned, aging industrial area that was bought and designed in order to develop an innovation zone with various partners.

The CORTEX Innovation Community forms a 200-acre district that is part of the Central West End and Forest Park Southeast residential neighborhoods in St. Louis. Nearby are St. Louis University, St. Louis Community College, Washington University, Missouri Botanical Gardens, St. Louis Science Center, Center for Emerging Technologies, St. Louis Art Museum, BJC Healthcare, the 1,400-acre Forest Park, and various bike and walking trails. CORTEX is a tax-exempt, nonprofit organization formed in 2002 by Washington University in St. Louis, BJC Healthcare, University of Missouri—St. Louis, St. Louis University, and the Missouri Botanical Garden. The district is focused on fostering bioscience and technology research and providing a space for associated businesses to develop and flourish (Greenberg, 2015).

As one of the most successful innovation zone cases throughout the world, Cortex has completed or has under construction 1 million square feet of new and rehabilitated space totaling \$350 million of investment and generating 2,500 technology-related jobs. A new Interstate 64 interchange

and public park together with streetscape improvements completed by April 2014. When fully implemented, the Cortex master plan projects \$2.1 billion of construction, over 4.5 million square feet of mixed-use development (research, office, clinical, residential, hotel, and retail), a new MetroLink light-rail station and 13,000 permanent technology-related jobs (URL 6).

CORTEX bought, assembled and cleared roughly 180 acres of land for the development of the district, at a cost of around \$29 million. The proximity to major research and health institutions was necessary to develop and capitalize the biotech industry. However, the district is not only expanded as a place for research and technology alone, but as a mixed-use development which links retail and residential uses (Greenberg, 2015).

Therefore, one of the most important aspects of CORTEX was creating a mixed-use innovation community through filling the zone up with not only technology buildings, but also integrating with retail, integrating with residential, so that people are able to walk to where they work and are able to stay in the district and dine in the evening (URL 7).

The amenities that are included in the CORTEX are (URL 8):

- Biomedical science and overall technology research facilities to incubate some of the nation's most promising technological advances.

- Customizable lab and office space for rent

- Innovation Centers:

- CET St. Louis: The Center for Emerging Technologies (CET) helped establish and develop next generation biomedical science and other advanced technology companies and served for startup technology and life sciences companies. It provided the infrastructure and resources needed for early-stage, high-growth companies in the fields of information technology, bioscience and consumer/manufactures products. A \$5M renovation was completed in June 2015, which includes District's first co-working space (URL 9).

- CIC St. Louis: CIC is special place for fields such as public relations, law, and the academic communities are the focus of the center. The CIC houses over 800 companies, which are mostly startups (URL 10).

- Venture Café St. Louis: Venture Café is a weekly gathering for the entrepreneurial, innovative, and creative communities of the St. Louis region. The purpose of this space is to connect communities of innovation, expand the definition of innovation and entrepreneurship, and build a more inclusive innovation economy through providing an opportunity for the participants to engage innovation and entrepreneurship conversations (URL 10).

Distinguished Features

The practices that made the CORTEX Innovation Community successful can be summarized as (Greenberg, 2015):

- Innovative financing - The district was designated as a Tax Increment Financing (TIF) District in the city, which provided a funding mechanism to shape development in the district.
- Focus on minority populations: As part of the TIF agreement, the community was required to include minority-owned and women-owned business enterprises in development project teams, contracts and purchases. Projects constructed in the district must ensure workforce diversity by including, minorities, women, city residents and apprentices enrolled in local training programs (URL 11).

Art and Cultural Districts

In most general words, art districts are the areas where places of cultural consumption are created through art and craft-oriented places and used as an economic development catalyst. Cultural districts, on the other hand, are formally designated or labeled areas with high concentrations of cultural activities and institutions. These districts are not limited with arts (i.e., other land uses occur), and what constitutes “culture” can vary widely across and within districts. They are not just clusters of galleries or theatres, but are areas with defined boundaries that are formally labeled as such a district (Noonan, 2013). Common intervention goals across art and cultural zones are to (McKenan, 2015):

- Urban regeneration to recover degraded areas
- Attract tourists
- Attract external investments
- Give a positive image of the city
- Support the cultural sector
- Enhance artistic and cultural heritage
- Support creativity and innovation
- Form and strengthen local identity.

Review of literature also suggests that the following key factors are crucial for a successful cultural district development:

- Presence of skilled actors who support cluster/district implementation

- Creation of a body which interacts with all actors and coordinates district administration
 - Effective collaboration between public and private sectors
 - Common vision of cluster/district and definitions of clear-cut goals shared by all actors
 - Achievement of a critical mass in the number and quality of actors and services
 - Diversified financial sources
 - Creation of an identification and advertisement trademark for the district and its products
 - Regulation of propriety rights and quality standards
 - Toning of co-operative/competitive forces and control of opportunistic behaviors
 - Networks for relations between economic, non-economic, and institutional actors
 - Participatory decision-making process

Lower Town Arts District

Being known as one of Paducah's oldest and significantly historic residential neighborhoods, Lower Town is famous for its award-winning *Artist Relocation Program* (ARP), which stimulated a successful revitalization project that goes on today with the addition of the *Paducah School of Art & Design Campus* in Paducah, KY. The city started an incentive program to bring in artists to help build and re-shape some of Paducah's blighted communities and give the city as a whole a cultural identity that will bring people together and help stimulate the local economy. More than 70 artists have come to Paducah and have helped to re-design the Lower Town area, which was Paducah's oldest and most troubled community. "Artist Relocation Program" can be described as a strategy for recruiting artists to revitalize old historic homes while continuing their own careers in creating art through certain incentives, which are exclusive to interested artists (Tartoni, 2007).

The Artist Relocation Program was successful enough in recruiting more than 75 artists/residents/businesses to Lower Town. Artists invested more than \$30 million (primarily through a generous and innovative financing arrangement offered by community partner Paducah Bank) with only \$2 million of City general fund monies spent (URL 12).

Distinguished Features

The business and marketing strategies and aspects that make of the Lower Town Art District successful can be summarized with the following (URL 13):

- Paducah Main Street focused on developing and marketing the downtown as a whole. To retain and build a compatible business mix, the Main Street program created a targeted recruitment program and a strong package of incentives, many centered on the downtown's historic real estate. City-owned historic buildings could be purchased for as little as \$1 by qualifying investors; and a façade loan program funded by the city and administered by Paducah Main Street encouraged property owners to restore their buildings to their original design.

- Targeted incentives were used to recruit desirable businesses downtown. When Hooper's, a local sporting goods retailer, outgrew its store, Paducah Main Street set out to bring the business downtown. Hooper's needed a large retail space and the downtown needed an anchor store to attract shoppers to the area. Of the buildings offered, Hooper's settled on a 12,000-square-foot building, with a half-block historic façade. The building needed a complete rehab, but with the right incentives, Hooper's owners were up for the challenge. Incentives included the building conferment, façade loans, and a partially forgivable upgrade loan, matching marketing funds, and marketing initiatives for the retailer.

- While recruiting new businesses is essential to a thriving downtown, maintaining existing businesses was equally important. In order to achieve that, Paducah Main Street launched a membership-participation incentive program in which members can offer their services at a discount to other members and to new businesses that contribute to the success of the downtown.

In addition to the successful strategies on businesses, one of the most important features of this zone is their planned actions on the physical environment. These aspects are as follows:

- Along with preserving downtown's historic buildings, Paducah Main Street realized that it needed to create an inviting atmosphere for shoppers, workers, residents, and visitors. To this end, efforts have been made on developing attractive walks, seasonal landscaping, alluring window displays, and public art.

- One of the organization's most successful fund raisers was the "Buy-a-Brick" program. Areas of sidewalk were designated as commemorative walks. Nearly 600 people bought bricks, raising enough money to pave four city blocks with wide brick sidewalks and install garden areas. The sidewalk gardens are maintained by local garden clubs

and private citizens, as are most of the commemorative park benches and public art sculptures in the district.

One of the major difficulties in the process of converting Lower Town into a target for artists was how to attract artists from all over the country. For this problem, the program offered the following (Tartoni, 2007):

- A variety of incentives for the goal of bringing artists to the community. Included in this package of incentives are financial loans and grants, health care packages, and nationwide marketing, along with the cultural assets that the region offers.

- Paducah Bank is being also a major component to the Artist Relocation Program offering much of the financial incentives for properties bought and financed in Lower Town. The Artist Relocation Program’s website (<http://www.paducaharts.com>) provides a short synopsis of these program incentives, while also providing house listings, a list of artists, events in Lower Town, and etc.

- Tax incentives that benefit artists are included in the Artist Relocation Program. Tax incentives can be considered as a cultural means that has found successes in many urban settings.

- Another way Lower Town has attracted artists and visitors was promoting their cultural assets in walking distance. The increasing number of galleries is one of the cultural assets that Lower Town has to offer. The identification and promotion of the cultural assets in and around Lower Town has given Paducah the image of a cultural destination for visitors and artists looking to settle. Two of the major cultural assets in Paducah are The Luther F. Carson Four Rivers Performing Arts Center and the National Quilt Museum, both within walking distance of the Lower Town Arts District.

- The artist relocation program, which was designed to give artists a residence and pay for their housing as well as give them a grant to help fund their projects and allow for a living stipend (Covert, 2012).

Crossroads Arts District

Through forming approximately 390 acres today in Kansas City, Missouri, the Crossroads Arts District has been named one of the “15 Great Places in America” by the American Planning Association through its successful conversion of old warehouses, historic buildings, bike sharing stations and public transportation (URL 14). Once filled with vacant buildings, the district today is being home to more than 400 local artists and 100 independent studios and is considered as one of the most concentrated gallery districts in the nation. Before it was called the

Crossroads, the area was considered part of “Midtown” or sometimes just “the area between Downtown and Crown Center”. The purpose of the project was to turn what was once a handful of artist studios and galleries into a cultural center for creative arts, tech innovation and destination dining (URL 15).

While the main uses of the district are based on arts, entertainment, event spaces, food & drink, retails, and services; the major physical spaces can be listed as follows (URL 16):

- Galleries
- Decorative-object stores
- Design stores
- Restaurants
- Artist studios
- Architectural firms
- Advertising agencies
- Live music venues

One of the most interesting aspects of the district is its management model. The district is being managed by *Crossroads Community Association (CCA)* which is governed by a carefully chosen Board of Directors in which each Director must live, work or otherwise hold a stake in the Crossroads Arts District. Currently, the district is also home to over 2,000 residents and is functioning mixed use neighborhood. The residential area includes small-scale grocers, bakeries, home décor, dentists, pet stores, yoga studios, banks, movie theaters, printing services, coffee shops, and restaurants which are centrally located near downtown and the art district (URL 17).

As for the businesses, the district offers assistance and provides physical spaces for real estate, co-working and shared spaces, startups and accelerators, and incentives (URL 18).

Distinguished Features

The distinguished features of the Crossroads Art District, which also led to its success can be summarized with the following aspects:

- Mixed-use neighborhood with a multitude of amenities
- Strategic creative district expansion policies
- Implementing distinctive wayfinding signage

- Improving streetscape through the use of the Tax Increment Finance plan (which is aimed as a means to finance public investment into the project) to improve the aesthetic of the Crossroads such as improvements in lighting, street paving, and sidewalk construction as noticeable upgrades.

- Significant works of architecture

- World-class art museum

- Events (First Friday Art Crawl, Second Saturdays, Annual Crossroads Music Festival)

- Creating a “landmark” venue as an arts destination to draw attention for artists, visitors, and community (such as the Kauffman Center for the Performing Arts and the Green Community Garden as an addiction which promotes green technology).

- In order to maintain the distinct creative synergy of the Crossroads, the Crossroads Community Association (CCA) began working with Mayor Kay Barnes to develop a *tax abatement plan* for those property owners with property devoted primarily to creative uses. In 2007, the Planned Industrial Expansion Authority (PIEA) Board of Kansas City declared the area blighted, making the district eligible for tax abatement purposes. The tax abatement allows eligible property owners of arts and cultural uses to pay property taxes based on the assessed value of their property for the next ten years, rather than increasing with each new assessment (McKenan, 2011). These types of policies are recommended in literature as well.

Downtown Peculiar Arts & Culture District

Being located 25 miles south of Kansas City on Interstate 49 and covering approximately 75 acres within the center of Peculiar, Missouri today, the Downtown Peculiar Arts & Culture District (DPACD) held its first meeting in January of 2007. It started as a nonprofit corporation and has gotten to a point where it was recognized as a successful art district that Missouri Arts Council presented the Downtown Peculiar Arts and Cultural District with its 2015 “*Creative Community*” award (URL 19).

Although Peculiar is a small town, one of the advantageous aspects of the city is its location through being near enough to Kansas City, MO, which is considered as the *Metro Area* and Overland Park, KS. This aspect helps Peculiar to both ensure availability of "big city" attractions to community and having access to people who are travelling through in the Metro Area (URL 20).

The amenities that were included in the vision plan are as follows (URL 21):

- Bandstand
- Outdoor theatre
- Vest pocket parks with interactive public art
- Benches
- Street lights with planters and banners
- Street musicians
- Unique people moving system (such as electric golf carts)
- Temporary public art
- Public art walk
- Festivals
- Events
- Farmers' & Artists' Market
- Holiday events and decorations

According to the district's business plan, the permitted physical uses of the district are also listed as (URL 22): Art gallery; Artisan production shop; Artist studio Bakery (retail only); Bank; Bar or tavern; Barber or beauty shop; Bicycle repair; Boarding or lodging house; Brew pub; Bus station; Business or professional school; Business service; Clinic (medical or dental); Club (health); Club (private); Daycare center; Drycleaner; Furniture (hand-made furniture only); Garment repair; Indoor recreation or amusement; Live/Work unit; Miniature golf course; Museum; Office; Outdoor recreation or amusement; Parking lot; Performing arts theater; Pet daycare in a completely enclosed building; Pet supply store; Place of religious exercise or religious assembly; Preschool Print shop; Restaurant; Retail sales or service; School for the arts; Single-family dwelling & Two-family dwelling; Small engine repair; Specialized product store; and Visitor's center.

Distinguished Features

Although there is a difficulty in finding information and documentation on the district's current conditions due to the district's board dissolving (the board has announced that the district is dissolving recently), most of the distinguished factors that led the district's accomplishments in the past years seem to be based on providing social, artistic and/or educational activities. These aspects can be summarized as:

- Events that offer entertainment (such as Peculiar Piccadilly & Art Auction, The Clara Brierly Festival of the Arts, Chamber of Commerce's

Harvest Moon Festival, which is described as “kid-centric”) with free admission and to public.

- Classes, public art programs, and workshops (such as Eggzibit, which is a temporary public art exhibit)

Avenue for the Arts

Located in Grand Rapids, MI, the Avenue for the Arts is a neighborhood title for the South Division commercial corridor which includes residential, commercial and nonprofit groups working together. The purpose of the avenue is to serve the artistic happenings going on in the community and bring renewed attention to the area while building an economy of art and a place where business and residents can build permanence and sustain. The avenue is now home to 65 storefront businesses & nonprofits, 600 artists, 300 students, and 189 volunteers (URL 23).

The main physical uses of the avenue can also be listed as follows (URL 24):

- Headquarters for the Avenue for the Arts
- Office for learning lab interns who facilitate all Avenue events
- Gallery space showcasing local artists
- Education/information spot where Avenue newcomers can get more information
- A community meeting space
- A park
- Live and work units
- Parking lots
- Businesses

The main businesses of the avenue are (URL 25):

- Retail & Galleries
- Social services and nonprofits
- Housing and real estate offices
- Food and Drink
- Salon and beauty
- Education facilities

- Services

Distinguished Features

The distinguished aspects can be summarized as:

- **ArtPrize Competition:** In 2009, Grand Rapids has conducted an annual ArtPrize competition which has grown to become the largest competition of its kind in the world, and it has the largest prize purse in the world at \$250,000. Artists from all over the country (and as well as Europe and Asia) have come to take part in the Grand Rapids ArtPrize competition. The result of ArtPrize has many people looking to Grand Rapids as an emerging leader in artistic collaboration with city communities to spur economic development and sustainable growth. The first ArtPrize event in 2009 drew an estimated 200,000 people to the community, including visitors from other continents. The local economy saw a very strong boost from this activity as it helped bringing tourists in as well. Overall, the competition was the most effective aspect in terms of bringing artists and tourists in and putting the zone in an international spotlight (URL 26).

- **Store:** Being considered to be the retail side of Avenue for the Arts, the idea behind Store was to be a shop where local artists can sell their goods whereas the entire store can be easily moved to another location. The reason why Store is unique is because all of the shelves and tables in Store are on wheels and compactable that can be moved to any storefront location. Store was also envisioned as an information hub for the creative community, while also serve as a way to highlight available spaces (URL 27).

- **Renovating the buildings into affordable live and work spaces for artists** (mostly open loft style spaces with amenities designed to appeal to artists)

- **Collaboration:** An Arts Advisory Committee, along with online survey results, help mold the design of the Martienau and Kelsey Apartments, which are renovated and used as artists' live and work spaces.

- **Community Involvement and Participation:** Community workshops and focus groups through having community members evaluate what forms of public artwork local residents would like to see in the future helped establishing the sense of community ownership. Also, encouraging temporary projects including small scale painted murals created by students and local residents, temporary land installations created by GVSU students, and installation sculptures into vacant storefronts in partnership with the Urban Institute of Contemporary Art can be listed as important strategies. In order to respond to community needs, most of the design projects were based on the results of from online surveys which were conducted with both community and artists. In addition to public artworks

and design of spaces, the logo of the Avenue was also selected by the community (URL 28).

- Events such as First Friday, Free Radical Gallery show, Urban Lights Event, Art Downtown., Avenue for the Arts Market, which target both residents and businesses through street entertainments.

- Providing Spaces for Arts Related Business Classes: Entrepreneurial classes to encourage the growth and expansion of arts related business activities of residents as an expansion of arts related business activities.

- Providing businesses courses, hosting lunches for business and nonprofit managers, and facilitating art show in traditional businesses (URL 29).

COMMON CHARACTERISTICS OF SUCCESSFUL INNOVATION ZONES

Innovation districts in existing cities have the advantage of an established urban environment with a mix of uses and density that creates opportunities for workers to engage with peers outside work, brainstorming solutions and ideas. Providing research space and offices and creating amenities to attract workers and connections that sustain start-ups are some of the most important crucial steps (Brown, 2014).

In summary, the common success factors of innovation zones are based on:

- Physical assets (such as green space, transit, mix use developments, shared work spaces)

- Economic assets (such as incubators and talents)

- Networking assets (such as themed events, social media, shared workspaces, meetups, etc.,)

According to the analysis of case studies and review of literature, the urbanistic features that make cities successful are also found to be crucial success factors for both art and innovation districts. These can also be summarized as:

- Density: variable of interest per unit of area; usually population, but can also be related to activity

- Diversity: Number of different land uses, diversity of businesses, and zoning

- Design: street network characteristics, intersections, street width, and other physical variable that define the environment

- Destination-accessibility: ease of access to attractions, both regional local, including jobs, shopping etc.

The most common types of spaces across cases are; science and technology facilities, lab and office spaces for rent, and innovation centers.

COMMON CHARACTERISTICS OF SUCCESSFUL ART AND CULTURAL DISTRICTS

The common characteristics of art districts can be summarized as:

- Most of the districts were built around existing cultural facilities, mainly museums and old historical buildings. Many of these facilities, along with the neighborhood around them, were decaying.

- Another common characteristic of arts districts is their proximity to convention and meeting spaces, as well as festival retail markets, sports complexes, parks, waterfronts, etc.,

- Another aspect is providing live and work spaces with a variability in extent, type, and condition.

- Zoning is an important factor in the creation of an arts district, where it can either inhibit or promote the type of growth desired for the district. Special zoning is required for a district that wants to develop a living and a working space in the same zone.

- Arts districts have a number of “instigators,” including arts and artist organizations, local growth coalitions, and downtown business groups. Collaborations between these groups and the local government are key in the formation and the stability of these arts districts.

Typically, there are very specific types of spaces within art districts. These main types of artist spaces in cities can be summarized as:

- Artists’ centers, which often function as resource hubs and places to socialize and display work

- Artist live/work space and studio buildings, which, as their title suggests function as places for artists to live and work, often at affordable rates

- And small performing arts spaces, which function as affordable community venues for the performing arts. These types of spaces are vital within districts as they help to attract and retain artists by providing social and professional networks and access which they would not otherwise have.

IMPORTANCE OF SOCIAL PLACES AS A DISTINGUISHED ASPECT IN ART DISTRICTS

Cultural districts are often mixed-use, incorporating retails, office, and residential spaces, they further allow frequent and repeated contact. Such variety of creative businesses and other land uses - from theatres, restaurants, and wine bars, to gardens and street life - ensures vitality and facilitates social interaction necessary to a strong cultural economy. Because art and culture are exchanged within social settings, the cultural economy depends on the ability for the interaction of work and social lives. This interaction is especially important as it facilitates the merging of different creative industries. The literature also shows that, the cultural economy is most efficient in the informal social realm, as separate creative industries —collaborate with one another, review each other's products, and offer jobs that cross-fertilize and share skill sets. Coffee shops, restaurants, and nightclubs are not only attractive assets of cultural districts, but essential infrastructural attributes of the cultural economy (McKenan, 2011).

RECOMMENDATIONS

According to the analysis of multiple case studies and review of literature, following facilities might be potentially useful for urban areas which aim to develop creative zones:

- Performance spaces
- Museums
- Galleries
- Artist studios
- Design stores
- Craft stores
- Art supplies stores
- Arts-related retail shops
- Restaurants and café shops
- High schools or colleges for the arts
- Art and design schools
- Educational facilities for young children and youth
- Residential / lofts to attract to attract artists and residents to site
- Music or media production studios

- Dance studios
- Arboretums and gardens
- Libraries

As for the innovation and technology purposes, following aspects might potentially be useful:

- Creating active technology centres
- Providing spaces for start-ups, entrepreneurs, real estate, and incentives
- Spaces of exhibition and spreading of the innovation and works of the sectors
- Providing spaces for public relations, education, and academic communities
- A community space and/or gathering spaces to connect communities of innovation for the participants to engage innovation and entrepreneurship conversations

Since the presence of companies and relevant institutions which serve as reference in the sector is a crucial aspect of innovation zones, businesses that are related to followings might also be potentially useful:

- Manufacturing
- Retail Trade
- Healthcare
- Construction

Additionally, analysis of the case studies and review of literature show that the most important strategy to bring tourists into the zones is marketing the events and festivals that take place in zones. Also, creating an inviting atmosphere for artists, residents, and visitors and making the site accessible from various directions for everyone are other important factors to be considered in the design phase.

The strategic plan of the zones should provide a clear statement of where the city is going and how it intends to get there. The case study research shows that these kind of development projects typically take at least 3 to 5 years to complete and follow this order:

- STEP 1: A vision
- STEP 2: A description of the mission of the organization

- STEP 3: Conducting a SWOT analysis to identify strengths, weaknesses, opportunities and threats of the city

- STEP 4: Conducting Case Study Research to identify patterns, processes, activities and space types of successful examples

- STEP 5: Creating an updated Vision Plan based on the previous steps to come up with a clarified vision statement which includes expected outcomes

- STEP 6: Setting the Goals to define and add what the goals, objectives, and strategies are

- STEP 7: Developing an Action Plan and organizing people including identifying organizations, individuals, committees, experts, advisors, directors etc.,

- STEP 8: Putting the plan into action

Since community participation is one of the most important elements in creating Art and Innovation zone projects, conducting a comprehensive survey is highly recommended to make sure that the places that are created will satisfy both artists/makers, and community needs as well as expectations. This idea is also essential for the technology and innovation zone developments, as it is crucial to attract groups and individuals through providing what innovative companies, start-up entrepreneurs, and young professionals need and want. Applying a “participatory approach” within this process can also help draw community’s attention to the project and establish the sense of ownership which potentially lead to an increase in bringing more people to downtown as they will feel valued. Because, although the case studies help us to have an idea of what types of spaces and businesses that typically do well in innovation and art zones, in order to specify those aspects and narrow down potential ideas, community input is a must have step within this process. It is suggested that combining the results of case studies with real-user needs and expectations will provide the best ideas for potential creative zones.

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CHAPTER 3

**URBANIZATION PROCESS OF KAYSERI IN THE 20TH
CENTURY***

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INTRODUCTION

Since the mid-20th century, the development and growth of the industry and service sectors have changed the urban macroform and spatial structure of Kayseri, Turkey. Since Turkey has been declared a republic in 1923, the city has become increasingly urbanized, partially because the Turkish state prioritizes Kayseri for its development-based industrial investments. Kayseri went through a planned development process after the enactment of the first development plan in 1945. As industrial activities in Turkey began to be conducted in a more organized manner on the national and international scale after the 1980s, the nature of the service sector changed. Since the 1980s, Kayseri has become a focal location as the Central Business Area in its region.

Kayseri's urbanization process has been shaped by the public works performed after the country was founded, and by the industrial initiatives formed by statist financial policies. This urbanization process can be traced through the activities of the public sector. Kayseri contains important

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examples of Turkish urbanization policies since the first years of the republic.

This study describes, from a holistic perspective, the changes that took place in Kayseri's urban spaces in accordance with the developments since the republican period. This description is comprised of three main sections. The first section briefly describes global patterns in urban developments and dynamics during the 20th century, including relevant economic factors and the urban and spatial processes arising from these factors. The second section explains Turkey's 20th century urbanization process in the context of the aforementioned global developments. Additionally, this section summarizes the specific economic, geographical and administrative-politic processes of Turkey in the 20th century. Finally, the third section examines the city of Kayseri's urbanization process in relation to the developments experienced in Turkey and other countries in the 20th century. Kayseri's urbanization process is divided into three different periods: the periods between 1923 and 1950, 1950 and 1980, and between 1980 and 2000. The Oelsner- Aru Plan (1945), the Taşçı Plan (1975), and the Topaloğlu- Berksan- Topaloğlu Plan (1986) each reflects one of the afore-noted periods and provides insights into Kayseri's urbanization process. The development of Kayseri's urban macroform, changes in its residential areas, and alterations in its formal characteristics were chronologically analyzed in line with the economic and social developments that have been experienced in Kayseri since the proclamation of republic; moreover, this section also examines the factors that created Kayseri's spatial development and changes, including financial investments as well as developments in the structure and density of the urban population.

GLOBAL URBANIZATION IN THE 20TH CENTURY, A BRIEF SUMMARY

The social and spatial results of the Industrial Revolution, a period symbolized by the scientific and technological developments which are the most important elements of the transition from the Medieval Age to the Modern Age, were observed most intensely in the 20th century. The size of production and relevant methods that grow or change based on the novelties in industrial technologies have augmented the scale of many fields, such as production and consumption rates, marketing networks, production facilities, labor force, urban population, and urban space sizes. Cities developed their economic formations in the extent of the developments experienced in the 19th century in a more specialized manner or more varied manner than in the Medieval Age. Industrial cities have been defined under inconvenient living conditions and urban chaos of an unparalleled size, with deracinated population trends and uncontrolled expansion (Alkan and Duru, 2002a).

The problems experienced in the process of transition from the cities of the Medieval Age to cities of the Modern Age paved the way for a variety of suggestions regarding urban schemes from different people. Examples of these urban schemes include the City Beautiful movement, Ebenezer Howard’s Garden City, Le Corbusier’s Radiant City, and Frank Lloyd Wright’s Broadacre City. All of these concepts aimed to help form livable cities by eliminating the problematic aspects of inequalities and the other spatial issues specific to capitalist cities (Şengül, 2002).

The urban world that emerged from the Medieval Age was the product of three historical developments. The first is the world itself and its integration and coherence with the globalization of economic and social activities. Markets that were previously localized and separated have been combined, and a global pattern of production and consumption coordinated by global laws and organizations have replaced the local markets. Additionally, the social patterns and relationships present on the local scale have been expanded and made global. The second of the three historical developments is the spread of cities toward new areas, increase in the numbers and dimensions, with a corresponding decrease in the number of regions that do not have an urban area. Finally, the third historical development is the transformation of the global society based on the extensive number of people living in urban areas and adopting urban lifestyles. As a result of these developments, an urban world that could be defined by the analysts of the previous century has been created (Clark, 1996). Table 1 briefly depicts the process of transforming the urban structure of the Medieval Age to the urban structure of the Modern Age.

Table 1: Principal Stages in Global Urban Development (Clark, 1996)

	1500-1780	1780-1880	1880-1950	1950-
MODE OF ACCUMULATION				
Economic formation	Mercantilism	Industrial capitalism	Monopoly capitalism	Corporate capitalism
Source of wealth	Trade in commodities	Manufacturing	Manufacturing	Manufacturing and services
Representative unit of production	Workshop	Factory	Multinational corporation	Transnational corporation, global factory
WORLD-SYSTEM CHARACTERISTICS				
Space relations	Trade routes	Atlantic basin	International	Global
System of supply	Colonialism	Colonialism/Imperialism	State imperialism	Corporate imperialism
Hegemonic powers	United provinces, Mediterranean city states	Britain	Britain, USA	USA

Table 1 (continued): Principal Stages in Global Urban Development (Clark, 1996)

	1500-1780	1780-1880	1880-1950	1950-
URBAN CONSEQUENCES				
Level of urbanization at start of period (per cent)	2	3	5	27
Areas of urbanisation during period	European ports	Britain	North western Europe, the Americas, coasts of empires	Africa and Asia
Dominant cities	Venice, Genoa, Amsterdam	London	London, New York	New York, London, Tokyo

The key element in the transformation of urban spaces following the Industrial Revolution is the change in the nature of industrial production that resulted in the transformation of first capitalist and small-scale production instruments mostly owned by single families into companies operating on national and international scales in the 20th century and on a global scale in the 21st century. The peak point of modernism is accepted as the period in the 20th century when Fordism and the concept of the wealthy state were dominant. The main activities of both the economy and the state were to increase production and include all people in the standardized pattern of mass consumption (Thorns, 2002).

Urban populations grew with the economic reforms and developments of the 20th century and with improvements in the public health and housing sectors. With the impact of urban form and patterns and developments in transportation technologies and systems, urban areas transformed from concentrated cities to a more common urban form typically seen in many western cities (cited from Saunders, 1990 by Thorns, 2002). The general appearance of urbanization in 1950s was that the urbanization cycle in the United States and Europe was completed or about to be completed, although only one-fourth of the global population lived in cities at that time. The significant and spatial result of rapid urban growth and urbanization of populations was metropolitan cities, which were the dominant residential areas of urbanized society (Clark, 1996). Metropolitan areas are defined as locations where multiple centers, each with their own activities and institutions and residential areas, are present (translated from Hatt and Reiss, Jr, 1957 by Alkan and Duru, 2002b).

With standardization that spread all over the world through urban uses and urban configuration, a number of concerns began to be raised regarding the modern city, which was characterized by suburban society and neighboring centers which met the daily needs with an urban center including civil and intellectual services. After the 1970s, the importance of

a built environment heritage was re-assessed due to an increasing interest in locality and cultural variety. This re-assessment initiated the movement to protect an area's rooted history and heritage. Efforts to protect neighborhoods from urban renewal programs and strategies to re-use abandoned buildings and environments by adapting them to their surroundings resulted in balancing the property-related values in these areas, promoting the artistic economy, and making new commercial and public investments (Freestone and Gibson, 2006). After this re-exploration of the local dimension in the 1960s and 1970s in an extensive form, figures such as Kevin Lynch, Edmund Bacon, Joseph Rykwert, Stanford Anderson, Paul Zucker, Leonardo Benevolo, Wolfgang Braunfels, Michael Hesse, Spiro Kostof, Rob Krier and Allan Jacobs rose to prominence for interpreting the urban space with their studies on urban design and transportation (Hebbert and Sonne, 2006).

1980s and 1990s were reviewed with the studies on the economic reconfiguration, de-industrialization and changes reflected by these concepts on the spatial and social structure of cities and with the researches that were authored within the discourse of transition from Fordism to post-Fordism and that examined the changing profile of urban labor, unemployment and urban labor force (Smith, 1980; Massey 1984; Bluestone and Harrison 1986). Consumption, rather than production, began to have a more significant impact on the urban form; additionally, greater importance was attributed to the notion of form, with the concept of variety becoming the dominant theme in place of similitude in urban studies as analyses influenced by post-modernism were the focal points (Soja 1989; Johnson, 1994; Watson and Gibson 1995; Thorns, 2002). As a result of the efforts to gain a significant place in the global market and become a "global city," new venues such as plazas, shopping malls, towers, closed sites, etc. were built in urban centers, in abandoned areas (such as old industrial estates or port areas), and in the areas where historical and cultural heritage are concentrated through the urban revival and re-development projects in the post-industrial period (Ercan, 2016).

These transformations in urbanization also shaped approaches to planning cities. Having been shaped as a series of innovative ideas at the end of the 19th century, this movement aimed to develop cities and protect architectural beauties and was based on land and housing reform developed to meet new requirements. Ideas reflected by this innovative movement gained a physical or professional focus along with the important initiatives such as the garden city or satellite city, and design-based repertoires that consisted of strategic concepts regarding urban growth, decentralized social cities and terms such as zoning or settlement order. Functionalist theories of the modern movement in architecture were reviewed in terms of cities in the next couple of decades, and strategic models and controls

were generated with radical thoughts on the “social city,” for the planned decentralization of metropolitan cities (Ward, 2004). The ideology that regarded old cities as a source of culture and artistic work with the historical perspective from the early 20th century disappeared following the zoning method based on functional separation that was developed in 1950s. The arrangement of cultural areas within restricted zones for different form of usage terminated the relationship between urban space and culture (Freestone and Gibson, 2006).

Following this broad perspective revealed in terms of urban planning, a rational and large-scale planning approach emerged that emphasized the development of regional institutional planning authorities. The most effective result of this approach was the separation of urban usage areas through zoning and other similar regulatory methods that created separation between housing, industrial, commercial, shopping and entertainment areas (Thorns, 2002). After the 1960s, the old tradition in urban planning of autonomous intellectual ideology started to lose its impact, and innovations in the field of planning focused on urban policy processes. The concept of planning gained a broader scope, and it also focused on analyzing the success of extant urban policies, such as “New Towns,” rather than on developing new or radically different models. Urban planning controlled the concerns of the private sector in regard to urban development until the 1970s, and remarkable changes were experienced as expectations regarding urban planning of 1980s emerged with the urban transformation processes strictly controlled by the market (Ward, 2004). Moreover, the large-scale planning conception that was adopted and implemented frequently was criticized from both economic and political aspects. Consequently, searches began for new concepts such as Gradual Planning or Defensive Planning. A new period began as neo-liberal policies that re-assessed the planning and development processes between the public and private sectors along with the developments experienced in entrepreneurship and free market processes became effective in 1980s. Additionally, other innovative concepts such as the Communicational Planning Approach and the Negotiation-Based Planning Conception emerged (Şengül, 2002; Ersoy, 2007). Table 2 presents an evolution of the changes in urban planning paradigms that occurred in the 20th century.

Table 2: An Evolution of Physical-Economic-Cultural Planning Paradigms (Freestone and Gibson, 2006)

Period	Paradigms	Theorists and practitioners	Places, Plans and Exemplars
1900s–1910s	City as a work of art	Daniel Burnham	The models of Paris and Vienna; city beautiful movement; Plan of Chicago; Plan for Canberra
1910s–1950s	Cultural zonation	Harland Bartholomew Patrick Abercrombie	Civic-cultural centers; neighborhood civic facilities; city functional and post WW2 master plans
1960s–1970s	Flagship facilities	Robert Moses	Lincoln Centre; JFK Centre; Sydney Opera House
1960s–1970s	Cultures of communities	Jane Jacobs	Community arts facilities; heritage movement; community cultural development; social planning
1980s–1990s	Culture in urban development	Progressive city administrations Pasqual Maragall Sharon Zukin	Cultural regeneration and cultural industries strategies; festival marketplaces; local economic development; European Capital of Culture; Barcelona; Bilbao; Baltimore; Glasgow; Manchester
1990s–2000s	The creative city	Charles Landry Richard Florida Allen Scott	Arts and cultural planning strategies; urban design; cultural precincts; cultural tourism; Huddersfield; Helsinki; Berlin

Urban planning efforts that were made after the emergence of idealized settlement schemes for healthy, organized and beautiful cities under the impact of problems regarding the cities from the Medieval Age aimed to determine the cultural scope of the elements that constitute urban space and the principles of spatial design, particularly as the interest in urban history increased in the 20th century. With the growth of market relationships and urban spaces after the 1950s, a large-scale planning approach was adopted, which included long-term policies that focused on economic development. This large-scale planning approach that reflected the spatial arrangement method as zoning was severely criticized with different social groups and priorities regarding cultural and public spaces in 1960s and 1970s. In the 1980s, post-modernist discourse that focused on local elements and culture was replaced with shorter-term strategic planning and neo-liberal policies.

URBANIZATION IN TURKEY IN THE 20TH CENTURY

It is difficult to argue that the urbanization of Turkey developed parallel to the west in the 20th century, as the Industrial Revolution did not realize in real manner in the Ottoman Empire. The Republic of Turkey, founded in 1923, based its development and modernization activities on western experiences of the Industrial Revolution. Turkey's early development model was formed by considering the relationships in

industrial city models between raw materials, production, and market relationships. Furthermore, Turkey's policies were created according to the idea that industrialization will be its key instrument of development; additionally, the agricultural sector, the main source of raw materials in that era, was prioritized and importance was attributed to the infrastructure of railway that would connect agricultural lands with industrial areas.

The process of urbanization that took place after Turkey was declared a republic was shaped by Turkey's subsequent economic and politic processes, and regional characteristic differences were seen in these processes. The relevant literature reflects the significant thresholds regarding the form of these policies as follows: focusing on the free market with reduced governmental impact on the economy in 1950s following the transition to the multi-party system in 1946; planned development policy initiated as of 1960 Turkish coup d'état; and liberal economic policies followed as of 1980 Turkish coup d'état (For periods in the examinations toward Turkey in the 20th century, see: Ökmen and Parlak, 2008; Tekeli, 2009; Yılmaz and Çifçi, 2011; Çoban, 2012; Erman, 2012; Sakarya, 2014; Şengül, 2017).

Remaining faithful to the literature, the thresholds regarding the urbanization in of Turkey in the 20th century were reflected in this study as follows:

- Urbanization between 1923 and 1950s— establishment of the new republic
- Urbanization between 1950s and 1980s—period of planning and growth
- Urbanization between 1980s and early 2000s—period of spatial capital

The objective regarding the period between 1923 and 1950 was to distribute governmental investments to the Anatolian cities by focusing on agriculture and agricultural industry and to achieve a balanced urbanization in the entire Anatolia (Şengül, 2001). Following the proclamation of the republic, the regulations and administrative arrangements regarding the development and infrastructure were enacted, and governors also serving as mayors accelerated the process of granting the sources to the local activities. The urban population increased in this period, along with the population of the entire country, and development plans of major cities were prepared under the impact and role of foreign experts in Ankara and İstanbul. Textures consisting of separate order and low-rise houses with gardens can be seen in these development plans, with the impact of the garden city trend which was dominant in the west until the early 20th century; industrial areas were considered to have the primary function in

these plans (Tekeli, 2009). The housing order that was based on the geometrical space concept and parceling trend was initiated in this period and implemented for many years. Public buildings built in cities and environmental arrangements for open areas such as streets, squares or parks were the places where the modern architectural style was effectively reflected (Şengül, 2017).

Political changes were seen between 1950 and 1980 following World War II. Additionally, mechanization was fulfilled in agriculture with the credits obtained through the foreign relationships, and the priority in transportation was set as the highway development (Erman, 2012). With the increase of integration upon the global capitalism, the industrial sector became more popular than the agricultural sector, and people moved from rural to urban areas owing to the issues regarding their lands. However, as this migration did not occur according to the needs of the industrial sector, unemployment and informal sectors grew; illegal housing was initiated as a result of these intense migration waves (Şengül, 2007; Erman, 2012).

Following the 1960 Turkish coup d'état, liberal policies were maintained and the governmental role in the economy was regarded as the directing and supervising element; accordingly, the State Planning Organization was established to achieve planned urban development throughout the country. After 1963, the objective was to develop the country through five-year development plans (Boratav, 2013). Moreover, master plan bureaus were opened for İstanbul, Ankara and İzmir, as these cities became metropolitan in this period (Tekeli, 2009). These practices indicate that the large-scale planning and zoning approach that was utilized in the west until the 1950s and severely criticized later was also implemented in Turkey. Nevertheless, the spatial and demographic unbalance that arose from the concentration of industrialization and urbanization in the west of Turkey could not be prevented.

Construction of houses increased as the population increased, and the trend of build-and-sell became popular. In addition, construction of higher education institutions, medical facilities, and buildings providing infrastructure services affected the formation of cities. Changes in policies regarding illegal housing resulted in greater “gecekondu” (slums), which increased land speculation in the market conditions of the following periods (Erman, 2012). Moreover, urban issues paved the way for the establishment of urban planning institutes and the initiation of undergraduate urban planning programs in Turkey (Tekeli, 2009; Ülker, 2018).

Liberal policies adopted since the 1950s were utilized and adopted even more by the governments that arose from the 1980 Turkish coup d'état, and privatization activities regarding neo-liberal practices became

more intense (Boratav, 2013). With the popularization of globalization, Turkey was included in the global economic network and performed its arrangements regarding investment markets, free trade, production regions, banking systems, etc. Metropolitan trends further spread in Anatolia, and foreign investors joined the investors already active in these metropolitan cities (Ökmen and Parlak, 2008).

The industrial orientation toward the west of Turkey, and particularly to the Marmara Region, changed direction. Abandonment of the substitution policies that protected production had a deterrent effect on the investments in the production sector, and investment and finance sector became more active. In this period, urban spaces became the priority for investments. Entrepreneurs in Anatolia had the opportunity to develop industries that produced for the external market, so they gained the skills of becoming integrated with the external world, which resulted in the emergence of new development focuses (Şengül, 2017). A group of cities, which included Kayseri, Denizli, Gaziantep, and others, was called the “Anadolu Kaplanları” (Anatolian tiger cities) (Erman, 2012).

Migration existed after 1980 in Turkey, but the illegal houses of the 1960s were replaced with new illegal housing areas created by the conditions of the new laws. In addition, transformation of illegal housing areas that remained within the cities through spatial growth became a hot topic for cities under the impact of policies that supported the construction sector (Erman, 2012).

The law on metropolitan municipalities increased the opportunities and effectiveness of local authorities, so that municipalities now had the opportunity to transform illegal housing areas or neglected old areas and perform urban projects regarding tourism, entertainment or consumption. Natural and cultural heritage areas were examined in these projects with similar properties. Project-based practices that increased with the migration period and metropolitan trends resulted in more focus on issues, such as unemployment, extreme population growth, medical problems, crime, social separation, and political unrest (Erman, 2013).

The increase in and distribution of population in Turkey in the 20th century reflects changes in urbanization. Following the proclamation of Turkey as a republic, the general population continuously increased, but the urban population ratio did not change until 1950. After that year, urban population corresponded to the half of Turkish population in the mid-1980s and two-third of the entire population in 2000, owing to problems in the rural areas and consequent migration from the rural areas to urban areas (see Table 3).

Table 3: Population of Turkey Between 1927 and 2000 (Based on TURKSTAT Data)

Year	Urban Population	Rate (%)	Rural Population	Rate (%)	Total Population
1927	3,305,879	24.22	10,342,391	75.78	13,648,270
1935	3,802,642	23.53	12,355,376	76.47	16,158,018
1940	4,436,249	24.39	13,474,701	75.61	17,820,950
1950	5,244,337	25.04	15,702,851	75.96	20,947,188
1960	8,859,731	31.92	18,895,089	68.08	27,754,820
1970	13,691,101	38.45	21,914,075	61.55	35,605,176
1980	19,645,007	43.91	25,091,950	56.09	44,736,957
1990	33,326,351	59.01	23,146,684	40.99	56,473,035
2000	44,006,274	64.90	23,797,653	35.10	67,803,927

The distribution of urban population across the settlements indicates that the number of settlements with a population higher than 100,000 increased significantly in 1975. Nevertheless, the number of cities in 1975 with a population less than 50,000 was still 83% (see Table 4). The more remarkable change was that the rate of settlements with a population less than 50,000 fell to 66% in 2000, and that the rate of cities with a population less than 20,000 fell from 50% (1980) to 37%. Increase of the rate regarding the cities that had a population higher than 100,000 to 19%, which indicates that the metropolitan trends frequently seen around the globe in the 1950s became prevalent in Turkey after the 1980s.

The urbanization dynamics of Turkey in the 20th century were shaped by western experiences and directed by economic and political priorities. The extensive planning and zoning principles dominant in the west until the 1950s were discussed and implemented in Turkey in the 1960s, and Turkey aimed to direct its development in all areas through planned development after 1960s. Additionally, the concept of local participation that emerged after the 1950s, searches for different social groups and planning conceptions that were discussed with the principles indicating local and cultural conditions yielded no effective results in Turkey until the 2000s. With the exception of three major cities, the metropolitan trends that were reviewed with the new urbanization or suburban areas in Europe in the 1950s became a new topic in Anatolia after the 1980s. Local authorities became increasingly active in urban processes with the 1961 Constitution Act, and then later the Law on Metropolitan Cities. Additionally, neo-liberal policies changing the balances between the public and private sectors showed themselves for the first time after

1980s in Turkey but they only began to more dramatically influence urban spaces after the 2000s.

Table 4. Distribution of Cities by Their Populations Between 1927 and 2000
(Compiled from The Data of TURKSTAT)

Urban Population	1927		1945		1975		1980		1990		2000	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
10,000-20,000	38	58	58	60	154	53	166	50	191	41	193	37
20,000-50,000	23	34	30	30	89	30	112	34	134	28	152	29
50,000-100,000	3	5	6	6	24	8	23	7	64	14	76	15
Over 100,000	2	3	4	4	25	9	29	9	80	17	99	19
Total	66	100	98	100	292	100	330	100	469	100	520	100

URBANIZATION IN KAYSERİ IN THE 20TH CENTURY

The first steps toward Kayseri’s urbanization in the 20th century were the national development moves initiated following the proclamation of Turkey as a republic. Although Kayseri experienced significant changes in its social structure as a result of population exchange, the city maintained its structure inherited from the Ottoman Era in the early years of the republic.

Urbanization of Kayseri Between 1923 and 1950 and the Oelsner- Aru Plan (1945)

The first national investments made in Kayseri were in line with the governmental development policy to focus on agriculture and industrialization. These investments included establishing the Aircraft Factory (1926), building the national railway to pass through Kayseri, establishing the Kayseri Rail Station (1927), distributing electricity to the city from Bünyan Hydro-electricity power plant (1931), and operation of Sümerbank Cotton Textile Factory with its social facilities and mass houses (1933) (see Figure 1). Rural structures and the agricultural sector were the dominant elements in the city during this period; commercial activities were most intense in the urban center. The industrial investments made by the government extended the role of the industrial sector in the city’s economic structure.

The public buildings and new streets constructed upon the instruction of the governmental policy garnered attention as examples of the new developmental practices of the era of the republic. The Institute for Girls (1939), the Governor’s Residence (1942), the Community Center (1942—designed by Leman Tomsu, and later transformed into the City

Theatre), the Government Office (1942), the Post Office (1942), the TEKEL Administration Building (1942) and the State Hospital (1943) are all examples of the modern architecture of the era. Atatürk Boulevard was planned to be used as a route to the State Hospital and Station Street. İstanbul Street then combined these two streets and constituted a border between the Kapalıçarşı (Kayseri Grand Bazaar) and external walls on the north side. These three roads were the first main roads in Kayseri.

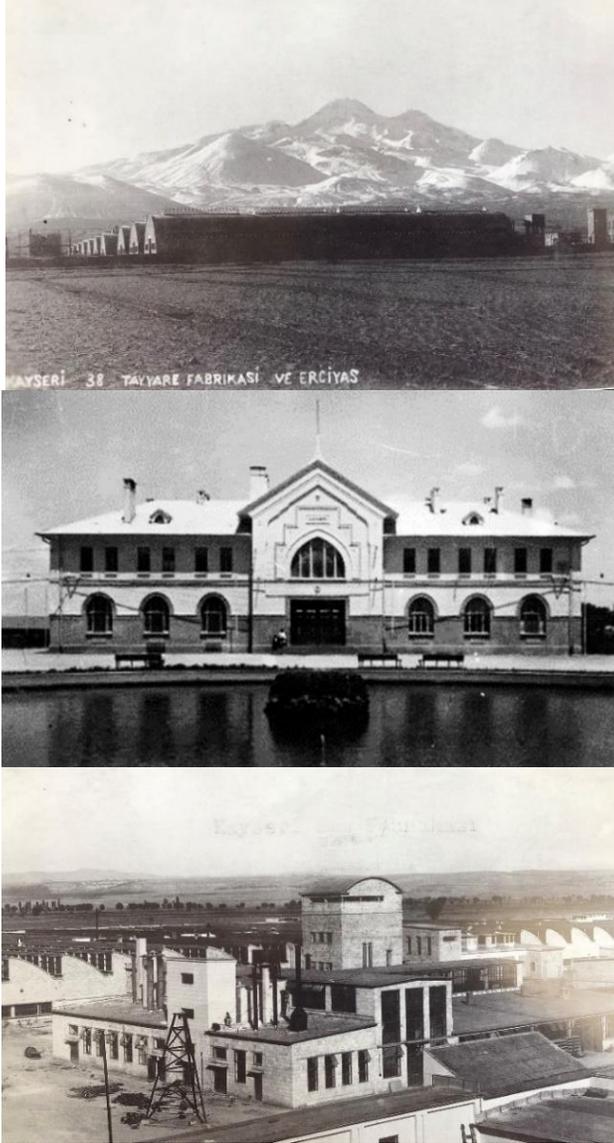


Figure 1: (Top) Kayseri Aircraft Factory, (Middle) Kayseri Station, (Bottom) Sümerbank Factory (Karakaya and Karakaya, 2002)

The intersection formed by the combination of Station Street, İstanbul Street and Sivas Street before the Inner Castle consolidated the city center. The subsequent construction of the Government House, the Post Office, and the Tekel Building created the first modern city square arrangement in Kayseri (see Figure 2).



Figure 2- Kayseri Square in the 1940s

Banks Street opened to the south of the Kapalıçarşı and the Inner Castle between 1936 and 1937. The bank buildings constructed as apartments on this street bear traces of the modern period as the first texture renewal examples for the traditional texture (see Figure 3). The 1/8000 scale preliminary and 1/2000 scale final project prepared by Burhanettin Çaylak in 1933 included proposals for new roads, parks, squares, administrative facilities, and new housing areas (Çabuk, 2012). These proposals had a great impact on Kayseri's development activities, which grew in number and rate until the 1940s.



Figure 3. (Left) Map of Banks Street, (Right) Current Form of Banks Street

Kayseri's main developmental activities between 1923 and 1950 are presented in Table 5, including the activity's year, location, and current

status. As can be seen in Table 5, visible growth did not occur in Kayseri's urban areas until the 1950s, and commercial activities took place around the Inner Castle and the Kapalıçarşı. Practices that intensified after the 1930s were performed as the investments made at different scales through public power, and these practices were the first steps taken to develop the city outside the older settlement area (see Figure 4).

Table 5: New Activities and Investments Made Between 1923 and 1950

Use	Year	Location	Current Status
Housing			
No residential area other than the traditional settlement.			Totally renewed other than a small section, which is registered as urban conservation area.
Commerce			
No commercial area other than the traditional center.			Totally renewed except for the Kapalıçarşı.
Industry			
Aircraft Factory	1926	External southeastern region of the current city	Factory was closed. The facility is used by the Military Association of Aviation.
Kayseri Sümerbank Cotton Textile Factory	1935	External northern region of the current city	Registered as a cultural asset. Used as the campus of Abdullah Gül University.
Public Services			
Railway and Station Building	1927	Northern side of the current city	Registered as a cultural asset. Still in use.
Sewing Atelier	1930s	External northern region of the current city	Collapsed.
Institute for Girls	1939	Within the current settlement	Still in use.
Governor's Residence	1942	Within the current settlement	Still in use.
Community Center (City Theatre)	1942	Within the current settlement	Still in use.
Government House	1942	Within the current settlement	Collapsed.
Directorate of PTT (Turkish Post)	1942	Within the current settlement	Collapsed.
Tekel Administrative Building	1942	Within the current settlement	Collapsed.
State Hospital	1943	Northwestern perimeter of the current city	Registered as a cultural asset. Still in use.
Kayseri Boys' School of Arts	1945	Southeastern perimeter of the current city	Still in use as a vocational high school.
Cemetery for Martyred Pilots	1946	Southern perimeter of the city (Kartal Junction)	Still in use.
Tuberculosis Hospital	1949	Urban center	Still in use.

Kayseri largely maintained its Medieval, compact urban form until the 1950s, when public facilities such as the Rail Station, the State Hospital, and new schools emerged as new spatial elements outside the macroform. Additionally, the Asri and Seyyid Burhanettin Graveyards and Gültepe Park provided open green areas outside the urban zone. Commercial activities generally occurred around the Inner Castle and the Covered Bazaar. The urban structure with a single dominant center and organic compact form is still visible (see Figure 4).

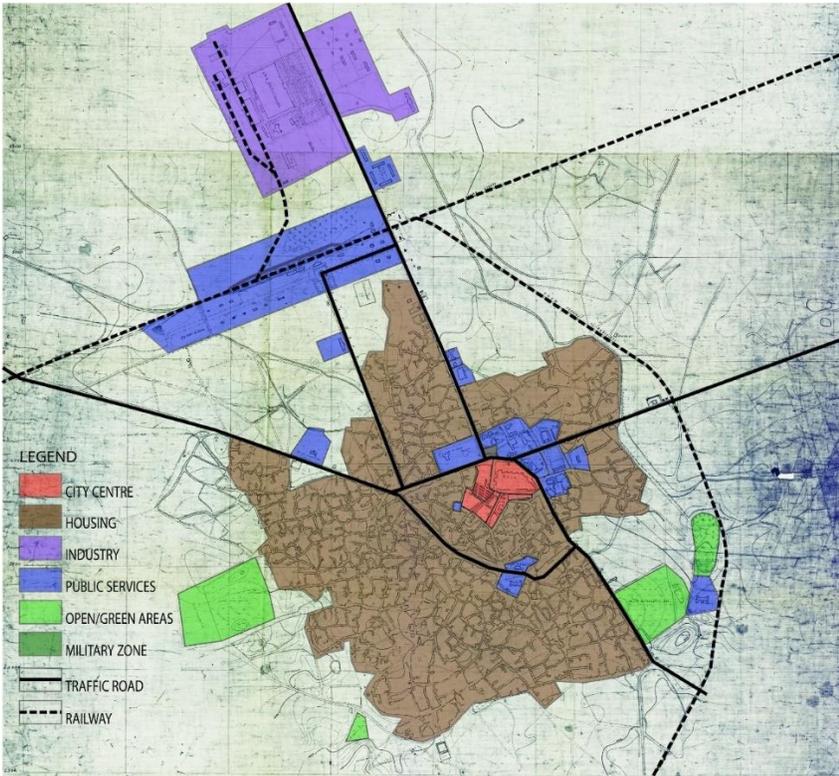


Figure 4: Land Use in the 1940s, Activities and Investments Made Between 1923 and 1950

Kayseri joined the urban development movement by using the holistic plans initiated in major cities such as Ankara, İstanbul and İzmir in 1945, albeit a bit late. Using a plan at 1/5000 and 1/1000 scales developed by Kemal Ahmet Aru under the supervision of Prof. Gustav Oelsner, the ancient urban texture within and around the traditional city center was totally changed. The organic urban texture was replaced by a grid-based urban texture. Many historical and cultural buildings were damaged, but efforts were made to protect Kayseri's important public buildings. The Oelsner-Aru Plan indicates that their planned city was almost within the current borders of Kayseri. It also shows that some social

infrastructural facilities were added, and that they intended to create a partially green zone. The Oelsner-Aru Plan bears traces of the garden city concept popular during that era (Kocatürk, 2009).

Urbanization of Kayseri Between 1950 and 1980 and the Taşçı Plan (1975)

In the 1950s, the provincial and urban population of Kayseri reached beyond the values recorded in the 1927 census. The population of Kayseri's urban center increased from 39,134 in 1927 to 65,488 in 1950; as a result, the city showed characteristics typical of a developing city. The changes in Turkey's government and economic policies resulted in issues for rural areas, which led to increased migration to major cities, but both the rural and urban population of Kayseri significantly increased between 1950 and 1980 (see Table 6).

Table 6: Population of Kayseri Between 1927 and 2000 (Compiled from The Data of TURKSTAT)

	Provincial Population	Urban Population	Rural Population	Urban Center
1927	250,490	60,379	190,111	39,134
1950	403,861	301,871	101,990	65,488
1980	778,383	380,352	398,031	281,320
2000	1,060,432	732,354	328,078	536,392

Governmental investments in Kayseri after 1950 were limited to public services, but the effectiveness of the urban economy increased with mid-scale investments made by the private sector. In the 1970s, when production variety and scale grew, marketing and commercial activities also significantly increased in number. However, the commercial capital of the 1970s was not transferred to other industries through partnerships, which resulted in stagnation in the urban economy and caused local capital and local entrepreneurs to move outside the province. Then, in the 1980s, promotions and investments helped develop organized industrial activities, which revived the urban economy (Özaslan and Şeftalici, 2001).

Permanent steps were taken to support urban industrial activities in Kayseri between 1950 and 1980. The Small Industrial Estate (1957) was formed on the western axis of the city to gather craftsmen and manufacturers, and was one of the first industrial estates in Turkey (Kocatürk, 1988). The industrial site that was outside the urban borders during those years later gained a commercial property and partly remained within the central business district (see Figure 5). Some of the most important industrial investments of this area included the Birlik Mensucat (1953) factory and the Orta Anadolu Mensucat (1955) factory, which were established by private sector initiatives; the Kayseri 2nd Main Maintenance Center Command Base Repair Facility and Tank Factory (1954), which

was founded by military investments; and the Sugar Factory, which was built by a cooperative of sugar manufacturers (1955).

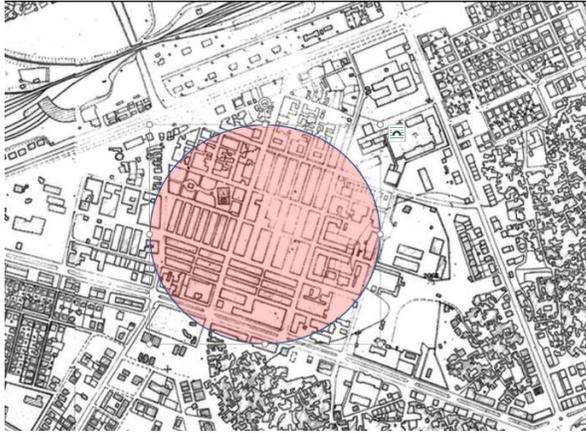


Figure 5: Map of Small Industrial Estate

Housing areas that were largely within Kayseri's traditional borders until the 1950s emerged as modern settlement textures on the main traffic axes and around new industrial areas, under the guidance of the Oelsner-Aru Plan (1945). The traditional pattern and historical center had changed functions, replaced by banking and commercial activities. The first steps of transformation from small-scale commercial activities to a structure where industrial and service sector developed were taken in Kayseri. The expansion or formation of many streets (Hospital Street, Osman Kavuncu Avenue, Sivas Avenue, Talas Avenue, etc.), which increased in number after 1930s, were maintained through the practices in Oelsner-Aru plan and constitute the main axes of the city in the present day, were completed by the end of the 1950s. The transformation of the organic urban texture from the pre-republican period to a modern texture that consisted of geometric building blocks shaped by a grid network started as building blocks of four- or five-story modern apartments (see Figure 6).



Figure 6: (Left) Kayseri's Urban Center in The 1940s and (Right) Kayseri's Urban Center at The End of The 1970s

Modern settlement zones quite different from the traditional texture emerged between 1950 and 1980. Neighborhoods such as Sümer, Yeni, Mevlana, İstasyon and Gazi Osman Paşa emerged around Sümerbank on the northside of the railway, the milestone of macroform development at that time. The Aydınlikevler and Hürriyet neighborhoods were formed around newly-founded private factories. While establishing these new neighborhoods, part of the old texture was demolished to build new roads. Accordingly, the Sahabiye, Örnekevler and Fatih neighborhoods warrant special attention. Sivas Street, which extended from the square to the east, was expanded between 1957 and 1958 to form an avenue. The Municipality Blocks were initially constructed on this axis, and the Fevziçakmak and Kılıçarslan neighborhoods were formed later (Kocatürk, 2009).

Apartments that had a geometric form and modern materials, roads that expanded in relation to the popularization of road vehicles, and building blocks that had parceling-based distinct lines quite different from the previous property texture were among the main characteristics of the new urban pattern in Kayseri after 1960s. These characteristics were totally different compared to the pre-republican organic settlement pattern. Buildings were constructed as three-, four-, or five-story apartments with either brick masonry or concrete. The transition from traditional single-family homes to multi-story buildings gained speed, but human scale was maintained in the urban texture (Kocatürk and Yücel, 2012). Some of the other interesting developments of this period include the construction of the first high-rise buildings in the urban center (the Vakıf Gökdelen Office Block, the former Hattat Hotel, and the Kaytim Commercial Center); the construction of new high schools after Kayseri High School through private or governmental initiatives; and the development of new environmental arrangements on the new beltway, such as İnönü Park (see Figure 7).

The urban center of Kayseri grew as the primary location in the city by the end of the 1970s, with commercial activities spread on the ground floors of the main axes. Kayseri lost its pre-1950s compact urban form by the end of this period. New settlement zones showed a growth pattern that looked like an oil stain on the eastern, northern, and western sections of the residential areas in the original, organic texture, but large-scale urban buildings on the main axes could be seen in all sections of the city, which helped the macroform gain a linear appearance. Industrial investments in the west, airport and new public buildings in the north, new residential areas in the east, and new public buildings, military zones, and a university in the south caused the urban development process to have different segments. The urbanization process of Kayseri from the 1950s to the 1980s

was affected by local dynamics and the government's establishment of public services (see Figure 8).



Figure 7: Examples of New Developments Between 1950 and 1980

Kayseri's participation in the migration trend began in the 1960s and grew after the 1970s. The illegal housing zones that were initially more common around the airport on the north and around Sümer Factory were later seen in almost every urban area. When they were established, these illegal housing zones were outside the residential areas, but they had an important role in the formation of the macroform as the city grew (see Figure 8).

The Oelsner-Aru Plan directed the post-1950s urbanization process in Kayseri in regard to the development and formation of housing areas, but a new plan was needed to adequately respond to the economic growth experienced after the 1960s. This new plan was designed by Yavuz Taşçı in 1975 as the second holistic urban development plan. It took the form of a master development plan (1/5000), implemented development plan

(1/1000) and unapproved 1/25.000 scale plan. The Taşçı Plan intended to transform the city from its previous compact form to a linear form through its main arteries, per the urban development orientations, formation of new modern housing areas, establishment of new industrial facilities, and consideration of the growing urban center as a central business district (CBD).

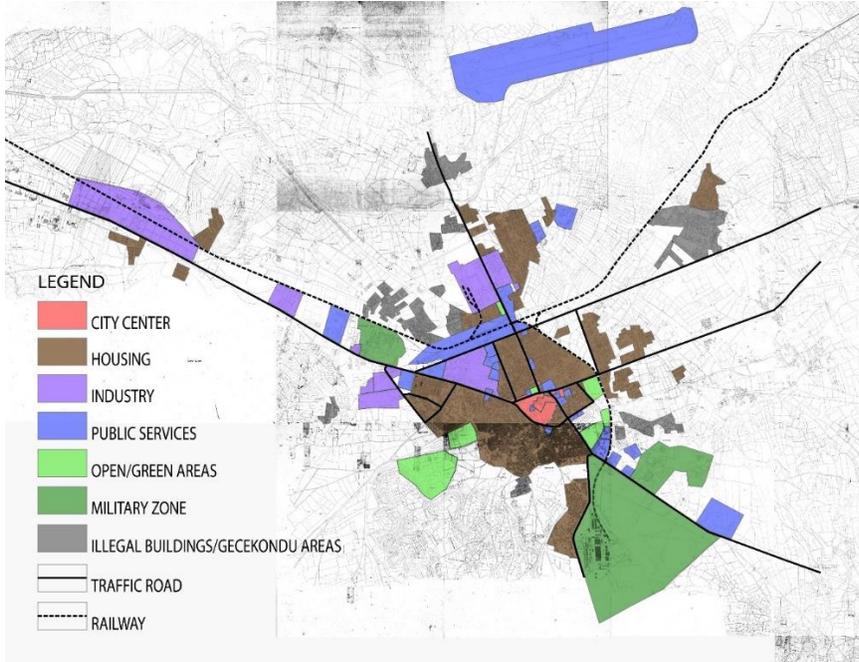


Figure 8: Land Use in the Early 1980s; development activities and investments made between 1950 and 1980

The Taşçı Plan originally envisioned turning Kayseri into a metropolitan city; however, when the city was reviewed as a province with a strong service sector and industry sector, monocentric urban structure with a linear form was suggested. Another objective of this plan was to form an urban texture with broad avenues and multi-layered buildings. A large organized industrial estate was suggested for the western area of the city; accordingly, the plan emphasized that the physical connection between other industrial facilities and the urban zone would be established (Taşçı, 1975).

In parallel to the economic development that occurred between 1950 and 1980, Kayseri's population as well as its urban borders grew, and its rate of illegal housing increased. Table 7 displays information regarding how urban areas were used during this time, and any new investments that were made in the city. Serious losses occurred in the first urban layer of the urban space from the 19th century occurred as the residential texture

from the pre-republican period was terminated; the new and modern residential texture formed after the 1950s offered high-rise apartments that were still at a human scale, but they partially terminated the previous texture and constituted a secondary culture layer in the urban space.

Table 7: New Practices and Investments Made Between 1950 and 1980

Use	Period/Year	Location	Current Status
Housing			
Örnekevler Neighborhood	Early 1950s	Northern side of the current city	Texture protected, and buildings largely renewed.
Cumhuriyet Neighborhood (Inner sections of the old bazaar)	1950s	Urban center	Texture and buildings largely renewed.
Sahabiye and Fatih Neighborhoods	Between 1950 and 1960	Urban center	Texture and buildings partially protected. Urban transformation project initiated.
İstasyon, Gaziosmanpaşa, Yeni Mahalle, Mevlana Mah.	Between 1950 and 1960	Northern side of the current city	Texture partially protected, and buildings largely renewed.
Hürriyet, Aydınlıkevler, Esenyurt, Şeker	Between late 1950s and early 1960s	Western and southern perimeters of the current city	Texture and buildings partially protected. Renewal initiated for the texture.
Fevziçakmak and Kılıçarslan Neighborhoods	1960s	Eastern perimeter of the current city	Texture and buildings largely protected.
Camikebir, Hunat, Hacıkılıç, Hacısaki, Serçeönü, Cumhuriyet Neighborhoods (old texture renewed)	1950s and 1960s	Urban center	Texture and buildings largely renewed.
Commerce			
Inner sections of the old bazaar	1950s	Urban center	Still in use.
Shops under new apartments	1960s	Urban center	Still in use.
Kayseri Anatolian Fair	1967	Northern side of the current city	Still in use.
Vakıf Gökdelen Office Block	1971	Urban center	Still in use.
Underground Bazaar	1979	Underground of the urban square	Still in use.
Industry			
Birlik Mensucat	1953	External western region of the current city	Still in use.
2nd Main Maintenance Center Command Base Repair Facility and Tank Factory	1954	External western region of the current city	Still in use.
Orta Anadolu Mensucat	1955	External western region of the current city	Still in use.

Table 7 (continued): New Practices and Investments Made Between 1950 and 1980

Use	Period/Year	Location	Current Status
Industry			
Sugar Factory	1955	External western region of the current city	Still in use.
Small Industrial Estate	1957	Western perimeter of the current city	Still in use.
New Industrial Estate	1970s	External western region of the current city	Still in use.
Kayseri Organized Industrial Zone	1976	External western region of the current city	Still in use.
Public Services			
Kayseri Penal Institution	1952	Southeastern perimeter of the current city	Still in use.
New City Graveyard	1953	Southwestern perimeter of the current city	Still in use.
Beltway (Kocasinan Avenue)	1958	Northern side of the current city	Still in use.
Kayseri Indoor Sports Facility and City Stadium	1963–1964	Eastern perimeter of the current city	Demolished to construct a shopping mall
Public Library	1963	Urban center	Collapsed.
Erkilet Airport	1963	External northern section of the current city	Still in use as a civil airport.
Special Provincial Administration Building	1965	Urban center	Still in use.
İller Bankası	1960s	External northern region of the current city	Still in use.
State Hydraulic Works Premises	1960s	External western region of the current city	Still in use.
Regional Directorate of Highways Premises	1960s	External western region of the current city	Still in use.
Building of the Provincial Directorate of Development and Housing	1960s	External northern region of the current city	Still in use.
Social Insurance Institution (SSK) Hospital	1960s	Northern side of the current city	Collapsed, Emergency Service of a State Hospital built in its place.
Institution for the Protection of Children	1967	Southeastern perimeter of the current city	Still in use as the service building for a ministry
Sümer High School	1967	Within the current settlement (Sümer Neighborhood)	Still in use as a science high school

Table 7 (continued): New Practices and Investments Made Between 1950 and 1980

Use	Period/Year	Location	Current Status
Public Services			
TED Kayseri College	1967	Within the current settlement (Fevzi Çakmak Neighborhood)	Still in use.
Behice Yazgan Girls' High School	1969	Within the current settlement (Sahabiye Neighborhood)	Used as an Anatolian high school.
Kayseri Archaeological Museum	1969	Southern side of the current city	Still in use.
Kayseri Bus Terminal	1972	Western perimeter of the current city	Collapsed.
Erciyes University	1970s	External southeastern region of the current city	Still in use.
Kayseri Maternity Hospital	1970s	External northern region of the current city	Still in use.
İnönü Park	1977	On the beltway in the current settlement	Still in use.

Urbanization of Kayseri Between 1980 and 2000 and the Topaloğlu-Berksan-Topaloğlu Plan (1986)

The urbanization of Kayseri after the 1980s was significantly different from the previous periods. The moderate or large-scale industrial investments initiated by the government and maintained by investments from the private sector stopped, and small-scale industrial estates or small- and medium-sized enterprises (KOBİ) became more active. The urban expansion continued in eastern and western directions on the Ankara and Sivas axes in a linear form. Moreover, the total population rapidly increased while the urban population decreased, and the majority of the urban population was concentrated in the urban center. Kayseri's population in 1980 was 281,320, while by 2000 it had reached 536,392.

Some of the main urbanization developments in Kayseri after 1980 included construction of planned mass housing areas in the eastern and western perimeters of the city; destruction of nearly all of the ancient urban texture; more construction of high-rise buildings; efforts to integrate the Erkilet, Talas, Hacılar, and Hisarcık settlements around the urban center; and the popularization of secondary houses that bore the traces of vineyard houses in the south.

Owing to new urban developmental orientations and insufficiencies in the Taşçı Plan, a new plan was prepared by Melahat Topaloğlu, Bülent Berksan and Mehmet Ali Topaloğlu. This plan was approved and implemented in 1/25000, 1/5000 and 1/1000 scales in 1986. After Kayseri

was declared a metropolitan municipality in 1988, additional planning activities were conducted in 1989 and the plans were expanded to include the small settlements around the urban center. The general principles of the Taşçı plan were preserved in the Topaloğlu-Berksan-Topaloğlu Plan. The spatial enlargement of the city was primarily influenced by the sites selected for major facilities, transit route passages, residential areas, and organized housing developments. Moreover, the city was oriented to have a linear development. The plan regarded the industrial and service sectors as the city's primary economic activities, so the west of the settlement was designed to serve as an industrial zone with small industrial estates, while the east of the settlement was planned to be a zone for non-residential urban work area. Moreover, the plan protected the houses with gardens in the south. Urban development occurred quickly during the implementation phase by constructing small industrial estates, mass houses, and illegal housing prevention zones; additionally, the city center became more active, while destructive impacts on the site area increased. Consequently, the natural and traditional zones within the perimeter of the city were transformed into secondary housing zones (Kocatürk, 2009).

After the Law on Metropolitan Municipalities was enacted and the Kayseri Metropolitan Municipality was formed in 1988 (which, in addition to Kayseri, consisted of the Kocasinan and the Melikgazi district municipalities), the effectiveness of and possibilities for the local authorities in Kayseri increased. Using the power of planning, the municipal authorities' plans had significant impacts on Kayseri's urban center. The city center became the main location for commercial activity in the urban center, and one of the two main sectors for local capital was the industrial sector. The role of the local authorities in this period was to provide guidance to local capital rather than to act as an investor.

In the context of Turkey's regulatory arrangements regarding mass housing, large-scale mass housing investments were successfully made in Kayseri with the assistance of the local authorities and the private sector. The heights of the buildings increased with the growing popularity of apartments in urban spaces, and the city was transformed from blocks based on street structure in the housing order to a free order consisting of multi-flat block apartments. As the mass parcel structure became popular in Kayseri, the intensity of urban texture increased. Moreover, the houses became increasingly standardized as a result of high-rise apartments; typological variety decreased in the presentation of houses, and elements that would contribute to the city's spatial identity disappeared over time (see Figure 9).

The urban texture with geometrical order that was formed after the 1950s was maintained, but old apartments in the current parcel were demolished to construct new and greater apartments; the 1960s housing

units that were shaped to have a common style within the building blocks in 1960s were replaced in the 1980s with high-rise apartments that had large flats and a singular form within greater building blocks. The width of roads increased, and the gaps around apartments were organized to create more space for parking lots or gardens. The occupation-emptiness balance of the external urban space and third dimension relationships of the 1980s exceeded the human scale of the 1960s and 1970s, which resulted in the emergence of unique spaces that did not guide people through the structure of external urban spaces (Kocatürk and Yücel, 2012).



A sample of the fabric of the new housing areas



A sample of the fabric of mass housing projects



Houses of 1980-2000 period

Figure 9: Examples from Housing Areas Built Between 1980 and 2000

In the 1980s, Kayseri added industrial zones to its urban space that extended on the Ankara axes alongside the Osman Kavuncu Avenue and these zones were connected by neighborhoods in a linear structure to the west. Additionally, housing zones were built on the axis of Sivas Street at a greater intensity and in a grid-based compact form. Commercial wholesale areas were present within the perimeters of the macroform, and small artistic and industrial zones emerged in the newly-developed areas

of the urban space. Moreover, organized industrial activities became intense, and commercial activities reached beyond the stereotypes and were moved to shopping malls. Establishment of a free zone and an organized industrial zone kept the economy alive. Opening the airport for civil flights and formation of a campus for Erciyes University in the southeast made the urban growth orientations more diverse. In the 2000s, the urban form of Kayseri reached beyond the linear form and displayed a compact-linear appearance with a growth directed by different functions from different fields. Despite Kayseri's growing spread, its urban structure with a single dominant center was maintained, and the urban center continued to grow on the main transportation axes (see Figure 10). As a result of the fragmented urbanization created by broad-scale industrial and commercial investments and by mass housing areas, illegal houses increased within the gaps in the plans and reached their highest numbers in this period.

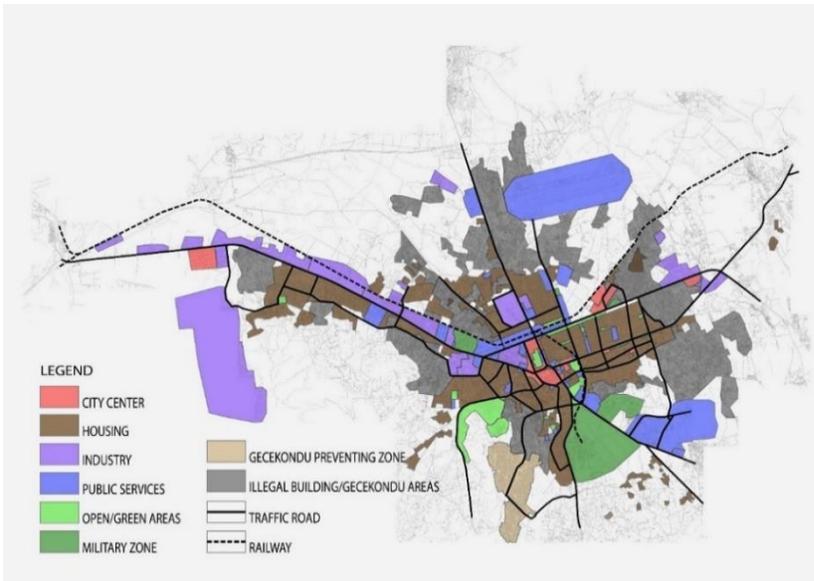


Figure 10: Land Use in The Early 2000s, And Activities and Investments Made Between 1980 and 2000

Table 8 presents the activities and investments made in Kayseri between 1980 and 2000. These results and the data presented in Figure 13 indicate that housing areas grew during this period, that investments were made in small- or medium-size industrial zones (KOBİ) rather than large-scale industrial plans, that shopping malls were opened in line with the modern trends, and that the public service efforts of the government and local authorities intensified during this period.

Table 8: New Activities and Investments Made Between 1980 and 2000

Use	Period /Year	Location	Current Status
Housing			
Alpaslan Neighborhood	1980s	Eastern perimeter of the current city	Texture and buildings protected.
Belsin Mass Houses	1980s	External western region of the current city	Texture and buildings protected.
Yenidoğan Neighborhood	1989	Northern side of the current city	Partially renewed.
Köşk and Gültepe Neighborhoods	1990s	Southeastern perimeter of the current city	Texture and buildings protected.
Büyükkent Mass Houses	1990s	External eastern region of the current city	Texture and buildings protected.
Beyazşehir Mass Houses	1990s	External eastern region of the current city	Texture and buildings protected.
İldem Mass Houses	1990s	External eastern region of the current city	Texture and buildings protected.
Danişmentgazi, Osmanlı, Selçuklu	1995	External southern region of the current city	Texture and buildings protected.
Commerce			
Kayseri Free Trade Zone	1995	External western region of the current city	Still in use.
Durmaz Office Block	1990s	Urban center	Still in use.
Kasseria Shopping Mall	1990s	Urban center	Still in use.
Kayseri World Trade Center	1990s	Urban center	Still in use.
Hotels with Stars (Hilton, Novotel, İbis, Radisson Blue)	2000s	In the urban center and on the western development axis	Still in use.
İpekşaray Shopping Mall	2000s	Eastern perimeter of the current city	Still in use.
Kayseri Park Shopping Mall	2000s	Eastern perimeter of the current city	Still in use.
5M Migros Shopping Mall	2000s	Eastern perimeter of the current city	Still in use.
Optimall Shopping Mall	2000s	Eastern perimeter of the current city	Still in use.
Forum Shopping Mall	2000s	Urban center	Still in use.
Industry			
Mid Industrial Zone	1980s	Western perimeter of the current city	Still in use.
New Industrial Estate	1990s	On the external western development zone of the current city	Still in use.
Eastern Industrial Estate (along with the estate of wholesalers)	1990s	On the external eastern development zone of the current city	Still in use.
Public Services			
Kayseri Municipality Building	1982	Urban center	Still in use.
Kayseri Courthouse	1983	Urban center	Collapsed.
Kayseri Army Officer's Club	1983	Urban center	Still in use.
Mimarsinan Park	1980s	Urban center	Still in use.
City Museum	1990s	Urban center	Still in use.

Table 8 (continued): New Activities and Investments Made Between 1980 and 2000

Use	Period /Year	Location	Current Status
Public Services			
New Government House	1990s	Urban center	Still in use.
Melikgazi Municipality Building	1990s	Urban center	Still in use.
Kocasinan Municipality Building	1990s	Urban center	Still in use.
KASKI Building	1990s	Urban center	Still in use.
KCETAS Building	1990s	Urban center	Still in use.
Culture Center of Special Provincial Administration	1990s	Urban center	Still in use.
Kadir Has Culture Center	1990s	Urban center	Still in use.
Building of the Provincial Directorate of Culture and Tourism	1990s	Urban center	Still in use.
Building of Revenue Office	1990s	Urban center	Still in use.
New Bus Terminal	2000s	Northwestern perimeter of the current city	Still in use.
Kadir Has Stadium and Sports Complex	2000s	Northwestern perimeter of the current city	Still in use.

CONCLUSION

The commercial cities of the Medieval Era were replaced by industrial cities with the contributions of technology to investment relationships after the Industrial Revolution. In this period, the urban population increased, and thus the primary issue was how to form residential areas to accommodate the people who worked in the industrial areas. Increase in the industrial sector's share of the collective economy and having a greater share than that of commerce, re-establishment of production and consumption relationships and emergence of production-labor concentrations re-shaped the residential systems. Moreover, cities grew in terms of both their populations and their physical areas; social and geographical structures changed; and the desire to create new spaces resulted in garden cities, metropolitan trends, densely-built mass houses, and suburban areas.

The urbanization process of Turkey did not progress parallel to the rest of the globe, but it was shaped by western experiences of industrialization, as well as its own economic and politic priorities. The extensive planning approach and zoning principles dominant in the west until the 1950s were discussed in Turkey in the 1960s, and Turkey aimed to direct its development in all areas through planned development. Additionally, the concept of local participation that emerged after 1950s in

the west, searches for different social groups and planning conceptions that were discussed with the principles indicating local and cultural conditions yielded no effective results in Turkey until the 2000s. New urbanization or the metropolitan trends in Europe's suburban areas became a new topic in Anatolia, with the exception of three major cities, after the 1980s. Additionally, the neo-liberal policies that change the balance between the public and private sectors showed themselves for the first time after the 1980s in Turkey, but it was only after the 2000s that these neo-liberal policies began to have a more dramatic effect on Turkey's urban spaces.

Kayseri maintained its properties from the 19th century, and the city became more dynamic with the first investments of the republican area. Moreover, Kayseri was one of the first cities to benefit from the government's domestic development project. No significant changes occurred in the housing and commercial areas of the city between 1923 and 1950. Sümerbank and aircraft factory were managed by the government, and all of the investments were made by the government to provide public services. Apart from a traditional settlement, the government's first interesting modern architectural projects included new traffic routes and architectural activities with a modern square idea in the 1940s. Accordingly, it is safe to state that Kayseri was a significant city for implementing new architectural arrangements based on the statist policies of the era. The city's important position can be clearly seen in its development plan during that era. After the Çaylak Plan (1933), which could be regarded as an extensive development implementation program, the Oelsner-Aru Plan—the city's first holistic development plan—was approved in 1945. Suiting the conditions and concepts of the era, the Oelsner-Aru Plan was one of the guiding elements for Kayseri's urban development after the 1950s with the housing arrangement activities maintained in accordance with the relevant zoning principle in a manner to reflect the decisions on area use which concerned the entire city and to display a modern urban pattern that was different than Kayseri's traditional settlement pattern.

The structure of urban space in Kayseri changed in a bi-directional manner after the 1950s. New and modern residential areas emerged extensively after the 1960s, and at the same time the renewal process started for the traditional city center within the outer city walls. In the 1970s, the residential texture within the walls had been totally renewed, excluding the monumental structures. By the end of the 1950s, the expansion or formation of many streets that were built or planned in the first years of the republican era, that were maintained through Oelsner-Aru plan and that still constitute the main axes of the city had been completed. In the same period, the first steps of a transformation from small-scale commercial activities to a structure where industry and service sector

emerged were taken, and the urban dimensions of the city center grew with the office and shopping activities along with the traditional commercial activities. Some of the most important developments of the era included private sector's industrial investments, inclusion of these investments to the national and international markets, establishment of military facilities and sugar factories through the contributions of cooperatives, and the emergence of small-scale industrial estates and wholesale commercial areas divided by sectors. These production facilities developed the macroform of the city in a fragmented form.

The Oelsner-Aru Plan led to the development in the 1960s around the Sümer Factory and new modern neighborhoods along the main transportation axes. These neighborhoods had two- or three-story houses with gardens and a relatively organized order. After other economic investments focused on spaces in 1970s, an orientation toward apartmentization began. The buildings' number of stories and the sizes of the flats increased, with the adjacent or block building structure becoming more popular. The issues of immigration and gecekondu that had long been in Turkey's urbanization agenda began to emerge in Kayseri in the 1960s and 1970s; illegal houses began to be constructed in the external regions of Kayseri with no connection to the city.

Public investments in Kayseri were maintained and actually more increased between 1950 and 1980. These investments included facilities constructed for municipality services, commercial investments made under the supervision of the local municipality, regional/provincial directorates, and campus-based trends regarding the public infrastructure service facilities. After the 1960s, the role of the private sector in the economy grew in line with the policies that were dominant at that time. Municipalities also became more powerful and effective in terms of urban development and infrastructure, owing to the opportunities granted by the 1961 Constitutional Law to local authorities. Additionally, public investments made by the government continued to exist in Kayseri. Despite these developments, Kayseri was largely not included in the metropolitan trends that emerged in Turkey during that era. Accordingly, the Taşçı Plan, enacted in 1975, drew attention with the perspectives regarding the metropolitan trends for the city. Planning of the urban center as CBD in a greater size and direction of industrial facilities to the urban perimeters reshaped the pattern of using areas in Kayseri.

Between 1950 and 1980, the traditional texture gradually began to lose attention, but still continued to exist, while new structures and residential areas were developed on the eastern-western axis and north side of the city. Kayseri's industry sector that was growing until the 1960s; changed as small- or medium size industrial zones (KOBİ) in 1970s. This orientation became more distinct after the 1980s, when KOBİs became the

dominant industrial actors in Kayseri. Some of the most important steps taken to encourage this development were the establishment of the Kayseri Organized Industrial Zone (1976) and the Kayseri Free Trade Zone (1995).

The 1986 Topaloğlu-Berksan-Topaloğlu Plan was the main factor behind the formation of Kayseri's urban space after the 1980s. In addition to the decisions regarding Kayseri's newly-suggested transportation network; new industrial focuses and the direction of commercial development; free architectural order covering high-rise apartment buildings in the plan for housing areas paved the way for apartmentization. Residential areas continued to grow in this period, and significant changes occurred within the borders and typology of housing areas due to the contribution of mass housing practices. Four- or five-story apartments that had a separate or adjacent order with the grid-based texture of previously built structures were replaced with high-rise apartment buildings that were built in a separate order or as blocks. The grid-based building block structure was not used anymore by the end of the 1990s. Instead, independent blocks that rose as high as 12 or 13 stories were constructed in a free order within greater building blocks. However, the number of gecekondü or illegal housing zones increased in this period. Upon the emergence of new illegal housing zones, the Municipality of Kayseri implemented Law No. 2981 and arrangements regarding the illegal housing prevention zones.

After gaining metropolitan status, the Municipality of Kayseri increased public services and the construction of urban roads and spaces, as well as new service buildings, which were constructed with specific architectural styles. Any remaining residential texture from the 19th century was demolished (excluding a 12-hectare zone that was declared a site area), while the post-1950s modern residential textures (in Örnekevler, Sahabiye and Hürriyet neighborhoods, etc.) were renewed in the 1990s.

Kayseri's 20th century urbanization process can be briefly presented as follows:

- The industrialization and marketing policies based on the governmental development seen until 1950s and liberal policies implemented between 1950 and 1980 had a clear response from the local plane in Kayseri. A period of stagnation in the industry of Kayseri and orientation toward smaller-scale businesses as well as a distinct concentration in the construction and housing sectors occurred in the political environment of Kayseri, targeting the service sector rather than production with the efforts to become integrated with the international markets in Turkey after 1980. Accordingly, it can be clearly seen that Kayseri successfully adapted to the central administrative policies and conjuncture.

- Both local actors and municipal authorities were quite active in the arrangements regarding urban policies, planning and spatial concepts, urban actions, and the developmental practices in three periods examined within the study. Accordingly, it is fair to state that governmental arrangements and policies were understood and assessed better than local arrangements and policies.

- Kayseri managed to implement holistic development plans when needed. During the 20th century, three different development plans were implemented to correspond to the critical urbanization dynamics prevalent during the period.

- Severe losses occurred in Kayseri urban space and memory because of the decisions regarding the urban plans and the spatial changes seen in urbanization process. Traces of different periods can be clearly seen from the social, economic, and spatial aspects (e.g. construction method, housing order, style) in Kayseri, but many of the buildings were constructed with overlapping layers from different periods, which distorts the city's spatial integrity.

- Kayseri maintained its traditional compact settlement form until the 1950s, when the city gained a linear structure based on new developments in the transportation network and land use. Despite this change in the macroform, the urban structure with a dominant mono-center has been maintained thus far. Although the urban center grew to the extent that it could gain the CBD character, Kayseri did not form organized suburban centers that could direct the intense urban activities into linear branches. The fragmented growth seen in the city after the 1950s is another factor leading to the absence of suburban centers in Kayseri.

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CHAPTER 4

**MODEL PROPOSAL FOR SUSTAINABLE
ENVIRONMENTAL MANAGEMENT OF THE LOCAL
GOVERNMENT IN TURKEY**

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INTRODUCTION

Since the formation of cities, there have been places where modernization has been experienced, technology has developed, rapid production has increased and uniform cities and human beings have been reinforced as a single type of individual. These developments and changes brought with it many problems in the cities that constitute the life frame of people. Growing and changing cities over time caused ecological balance and life threatening effects as a source of various problems. The environmental and social problems created by today's urban life have led to the development of new urban planning approaches to ensure healthier urban developments.

The approach that is frequently discussed in today's urban planning literature is; It is the planning and development of cities in a manner that takes into account the principles of sustainability. In order to sustain urban life, it is necessary to create living environments in healthy environments from social and physical aspects. For this, the development and management of cities should be healthy, natural and environmentally oriented. There are many competent institutions for healthy social and physical urban development. The duties, responsibilities and powers of the central and local government institutions, which are the authorized institutions, are determined by laws and regulations. These institutions are working to transform cities into livable spaces with their applications in different areas. However, threats such as rapid development of cities, intense building pressure, and rent-oriented development tendencies may lead to the formation of results that contradict with the ecological sustainability-oriented development targets. Some of the most important

reasons for this are very comprehensive and diverse, such as lack of coordination between institutions and failure to maintain practices and restrictions.

Local government agencies are empowered with a wide range of laws and regulations on environmental sustainability. They have the authority to produce application projects on these issues. Laws and regulations have given restrictive powers to local government institutions such as banning, blocking, and punishment. In addition, local governments have become obliged to implement practices that will allow the formation of healthy urban environments, such as infrastructure projects. However, local governments have the authority to produce a large number of projects that are not specified in the law regarding environmental sustainability. These projects may include participation-oriented approaches that enable the participation of the public, raising awareness on environmental sustainability and promoting these practices (Gülpınar Sekban et al, 2019). However, local government agencies may not be knowledgeable or willing in these matters.

For this reason, in this study, it was aimed to create a “environmental sustainability guide” for local governments, in order to inform local governments to be more effective in environmental sustainability issues, to raise awareness on these issues, to encourage the public to take necessary measures, to encourage them and to ensure participation. Thus, it is aimed that local governments have the chance to produce similar projects by seeing the projects implemented in other countries or cities when they want to produce a project on these issues, or they can easily have the opportunity to develop new project ideas.

Within the scope of this study, what needs to be done to achieve environmental sustainability goals in urban management will be examined, EMAS ((Eco- Management and Audit Scheme) and ISO 14001, which set an example for environmental management in many countries in Europe, have been examined and covered all local governments to create a model for sustainable urban management suggestions it will be presented in Turkey.

LOCAL GOVERNMENTS AND ENVIRONMENTAL MANAGEMENT SYSTEMS

In this section, environmental management systems, which set an example for the study, will be examined, the general objectives of these management systems, which reveal the deficiencies of local governments in sustainable city management, and plan what needs to be done in this regard under certain headings, and the environmental standards that they set up and consequently measurement standards based on certain criteria will be examined.

Environmental management systems, the combination of environmental management and system approach, points out the insufficient activities of the state and the industry sector on environment; It has developed in order to fulfill the expectations of the society in this regard and to ensure sustainability. (Yontar, 2006).

Environmental management has reached an important point for many private and public institutions. Because environmental management and the management system introduced in this regard comply with the legal requirements, as well as improvements in the elements that occur during the activities of enterprises such as waste reduction, less energy use and less noise (Yontar, 2006).

An environmental management system can be implemented in different ways depending on the specific sectors, their activities and the needs assessment of the management level. The common important points in an environmental management system are as follows.

- Environmental policy
- Environmental program or action plan
- Organizational structure
- Integration into the activities
- Certification system
- Analysis, surveillance and compensation information
- Corrective and protective action
- Environmental management system audit
- Management review
- Training
- It is external communication.

In the context of these approaches, there are two important environmental management systems to be examined to guide local governments. The first one is EMAS (Eco-Management and Audit Plan-Eco-Management and Audit Scheme).

Eco-Management and Audit Plan (EMAS)

EMAS (Eco- Management and Audit Scheme), the EU's Environmental Management and Audit System, stands out with its feature of being a management tool aimed at evaluating, reporting and improving the environmental performance of companies and other organizations within the EU. since 2001, public and private institutions have been participating in EMAS, especially SMEs, and the system is based on voluntary participation.

Local governments, private institutions, etc. who want to join EMAS. They can apply through member countries and three countries in the European Economic Area (Duru, 2007: 14 quoted by Zeytin and

Kirlioğlu, 2014). However, organizations participating in EMAS face the following obligations (transferred by Zeytin and Kirlioğlu, 2014);

- To determine an environmental policy that explains the objectives and principles of environmental measures they have taken,
- To test the products, services and activities in its environment from an environmental perspective,
- To carry out regular environmental audits,
- To develop an environmental management system.

EMAS is essentially based on an approved environmental management system operating on an ecological-audit basis and a public disclosure statement certified by an independent approver.

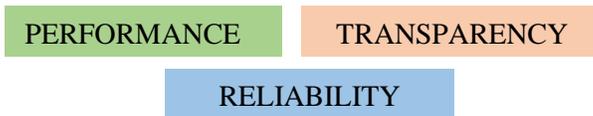


Figure 1: 3 Basic Principles on Which EMAS Environmental Management Systems Are Based

EMAS has three main points: performance, transparency and reliability (Wenk, 2005).

Performance: Organizations should aim to continuously improve their environmental performance with their commitment to assess their environmental impacts and mitigate any adverse impacts. It is a voluntary plan based on ensuring the balance of environmental protection-use in the territory of the EU member states.

Transparency: An organization is committed to continuously improving its environmental performance, but also has to present these performance results to the public. Public information is provided by disclosing the environmental impacts and performance of the organization through the environmental statement.

At this point, the EMAS logo, which can be displayed on the environmental statement, products, activities and services, gains importance as a visual tool that proves the organization's commitment to improving environmental performance and shows the reliability of the information provided.

Reliability: EMAS registration and approval process involving approvers and accreditation institutions under the control of EU member states; It guarantees the reliability of the environmental management system and the information provided by the organization to the public (Yontar, 2006).

The annual report, which is one of the most important features of Emas, should be prepared to inform the society in a short, understandable way. Technical terms should not be included. The annual report includes the following points (cited by Ayan & Baykal, 2009).

- Determination of other factors related to environmental performance,
- Emissions, waste, raw material, energy and water consumption, noise, etc. providing summary data on other environmental impacts,
- Identification of the activities in the institution concerned,
- The presentation of the environmental policy, program of the institution and the management system applied in the said institution area (Baykal, 2009).

EMAS envisages a periodic audit to ensure that the environmental management system is effective in its activities, that it meets certain objectives, and that it maintains compliance with relevant legal regulations and standards. Inspection is done at least once every three years. EU member countries have taken on the obligation to accredit independent auditors who have approved environmental statements prepared by institutions and to establish a system for recording these statements. Today, many local governments in Europe are registered with EMAS. Together with EMAS, it is seen that environmental management has achieved success on; Electricity consumption decreased by 14%, Water consumption decreased by 23%, Carbon dioxide emission decreased by 7%, since 2003, the first pulp paper consumption decreased by 8%, office paper consumption decreased by 41%, per capita waste decreased from 331 kilos to 294 kilos, an 11% decrease. recorded. In 1998, the proportion of staff coming to the city with a private car in Brussels was 50%, it was decreased to 29%, and the rate of using public transportation was increased to 50% (CHAMP).

ISO14001 Environmental Management Systems

Another environmental management system to be examined is; It is ISO14001. Another standard applied within the EU is ISO14001 Environmental Management Systems. ISO stands out with its success especially in ISO 9000 Quality Management System and has been considered as the most competent institution to prepare standards for this problem due to the diversification and widespread of environmental problems in the world.

The ISO 14000 series offers organizations a range of tools that will enable them to address environmental problems in a systematic and meaningful way. These standards offer a positive participation in decision-making function instead of imposing restrictions or upper limits on wastes,

and instead of addressing each environmental problem separately, it brings a comprehensive approach that will simultaneously create change in many areas (Haider, 2004).

The key to ISO 14001 is its emphasis on management. The system approach on many functions, such as planning, organizing, training, review and decision making, can be significantly improved with a precise set of rules that the staff and the organization will follow. Standards generally help institutions to create a unified approach to meet their environmental requirements (Başaran, 2009).

ISO14001 consists of "guideline" standards for establishing, controlling and improving the existing environmental management system in a business (quoted by Zeytin and Zağaçlıoğlu, 2014).

Institutions set up an environmental management system based on these standards and set the minimum levels required for its operation. The main features of ISO 14001 are as follows;

Preventive: It aims at preventing environmental damage before they occur,

Developer: It is aimed at improving performance through continuous controls and inspections,

Volunteering: It is based on the principle. However, once the system is installed, it is imperative to comply with the requirements of the standard,

System: The system used is supported by documented document procedures (by Başaran, 2009, p. 51).



Figure 2: Basic Principles of ISO 14001 Environmental Management Systems

Requirements of ISO 14001 Environmental Management System

The requirements of ISO 14001 are based on some methodologies. These; These are the conditions known as Plan - Apply - Control - Take action - (PDCA) (Environmental management systems - Requirements with guidance for use (ISO 14001: 2015).

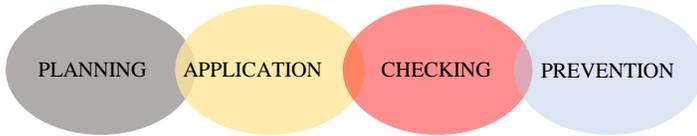


Figure 3: Application Conditions of ISO 14001

Plan: It determines the goals and processes required to announce the results of the enterprise environmental policy. At this stage, environmental aspects, legal framework, goal objectives and programs are used.

Apply: While these processes are implemented, resources, tasks, responsibility and authority, competence, training and awareness, communication, documentation, control of documents, operation control, emergency preparedness and response parameters come into play.

Control: The entity reports results to monitor and measure processes in accordance with environmental policy, objectives, goals, legal and other requirements. In the reporting phase, internal audit, control of records, non-compliance corrective and preventive action, evaluation of compliance, monitoring and measurement parameters are used.

Take Precautions: Measures are taken and management is reviewed to improve the performance of the environmental management system. Continuous Improvement: In line with the environmental policy of the enterprise, the environmental management system is constantly improved to increase environmental performance (Zeytin & Zağaçlıoğlu, 2014).

The organization should establish, document, implement, maintain, and continually improve an environmental management system in accordance with the requirements of this standard, and state how it meets these requirements. This should start first by creating an environmental policy of the institution. Top management should define the environmental policy of the organization and within the defined scope of the environmental management system;

- The establishment activities are appropriate for their nature, scale and environmental effects, products and services,
- Includes a commitment to continuous development and prevention of pollution,
- Includes a commitment by the organization to comply with applicable legal and other requirements regarding its environmental aspects,
- Provide a framework for the identification and review of environmental goals and objectives,
- Documenting, implementing and maintaining it,
- To be announced to all persons working in the organization and on its behalf,

- Ensure that it is accessible to the public (Yontar, 2006).

EMAS and ISO 14001. The general objectives and the methodology framework that implements sustainable local governments in Turkey must do for city governments are intended to be presented in the nature of a city guide in this study and other environmental management systems as set in the specific rules and functioning of fiction is planned to be a model proposal for local government.

Sustainable Environmental Management System in Local Administrations

The awareness of the strong linkages among humans and environment is recognized. It is common to refer to these systems as socio-ecological systems (Liu et al., 2007; Petrosillo et al., 2006; Zurlini and Girardin, 2008). In this context, social actors are increasingly required to be involved in decision-making processes concerning environmental management, giving relevance to the contribution they can provide in affecting the sustainable development in a positive way (Petrosillo et al., 2007).

This kind of management is defined as “adaptive management” and is based on a learning-by-doing approach (Holling, 1978; Gunderson and Holling, 2002). This perspective represents a similarity with EMAS tool, where the aim of the environmental management system is the continuous improvement of the environmental performance of an organization, i.e. local authority. Depending on the responsibility to local governments in environmental management in the environmental management system in Turkey it is based on the Stockholm Conference in the 1970s. The period when it became apparent is between 1970-1990.

Sustainable development was mentioned in these dates and environmental management approach was effectively included in the objectives of local and central governments. Environmental awareness gained a legal dimension with the awareness of environmental issues in 1982 and the EU process started to be followed more closely.

Today, local governments have adopted EMAS and ISO 14001 environmental management systems in order to carry out environmental management with certain standards, and have played a big role in encouraging institutions with environmental certification for the operation of these systems and brought a new dimension to environmental management. With the system, the rules that organizations should follow in the name of environmental protection are bound by laws and regulations and standards, and organizations are provided with an interest in this field. However, it is not possible to say that the local administrations do the same understanding in order to plan their own activities. By taking the planning

stages in environmental management systems as examples, activities and practices in the name of environmental sustainability cannot be implemented in cities. With this study, suggestions will be made for local governments' urban infrastructure, planning and management, design and social and educational activities by adopting the environmental management approach in EMAS and ISO 14001.

ENVIRONMENTAL MANAGEMENT SYSTEM IN TURKEY

The continual increase of environmental problems and becoming a situation that threatens all humanity has led to the development of national and international policies. In general, the Environmental Management System aimed at reducing the impact of the human on the environment and improving the ability of nature to renew itself. In this context, important duties fall on central governments in the formulation of national policies and implementation of Environmental Management Systems. The historical development of environmental management in Turkey are divided into three main periods.

The first of these; It is the period from the foundation of the Republic until the 1970s. The environmental management system in Turkey in the year in which the original is evident from the corresponding period in 1970 and 1990 after the 1972 Stockholm Conference. During this period, when "sustainable development" was mentioned, air pollution etc. in Ankara. The problems resulted in the establishment of the Undersecretariat of Environment, inspired by the SPO model in 1978, and in 1982 special provisions on the environment entered the Constitution for the first time (Akyol and Dedeoğlu Özkan, 2017).

The period from 1991 until today is the period in which the legal framework required for the organization of environmental management throughout the country has been reached. The Ministry of Environment was established with the Decree Law No. 443 of 1991, and the 3rd article of the Decree has enabled the "organization of the ministry in the central and provincial". As a matter of fact, the Environment and Forestry Provincial Directorates started operating in 31 provinces in 1992, the Ministry of Environment provincial regulation was issued in 1993, the EIA Regulation was issued in 1993, but the EIA Regulation came into effect in 1997 due to the detected deficiencies (Kara, 2002: 41).

The main problem in environmental management in Turkey is tried to be uncoordinated headquarters out of all authority. Although the regulations issued on different dates give local governments responsibilities on an environmental management scale, the whole system is linked to the central administration. Consequently, this situation is disrupted due to some administrative problems and literally, environmental management cannot be placed in a system.

Precisely at this point, EMAS and ISO14001, one of the environmental management systems that form the main subject of the study, are a guide for local governments to carry out environmental management on a local scale without focusing on central government. Modeled environmental management systems under study examined an environmental management system in Turkey is intended to be a model guide for local authorities in case of presenting suggestions for the title.

ECOLOGICAL SUSTAINABLE MANAGEMENT TARGETS AND MODEL SUGGESTION FOR LOCAL ADMINISTRATIONS

Solid waste management primarily requires taking measures to prevent the formation of waste and reduce it at its source. After meeting these conditions, separation, reuse, recycling and energy use are important for environmental sustainability in solid waste management. The goal of sustainable waste management is to reuse the wastes generated as a result of final consumption by utilizing the cyclical process in the use of resources for useful purposes (Palabıyık and Altunbaşı, 2004).

Recommendations Regarding Waste Management

Water Management

Water management is very important for ensuring environmental sustainability. In this context, infrastructure projects to be carried out by local governments can be equipped with new contents by taking into account climate changes. In addition, a wide range of projects can be implemented on the management of water, ensuring local people participate in the process.

- Separation: Rainwater drainage should be separated from the general wastewater system of the city: Separation of rainwater from the city's general wastewater system allows rainwater to be used and stored for other activities.

- Storage: Storage of rainwater under city parks and squares (Sponge city model): Areas under large green areas or squares in cities can be used for storing rainwater. For example, the green system called 'green fingers', implemented in Eco Viikki, Finland, is a good experiment for the ecological city. These areas are used for gardening, collecting rainwater and irrigation. Garden wastes obtained from these areas are also used as fertilizers. As the soil is clayey, the soil absorbs a small part of the water. To prevent surface water escape caused by this situation, environmentally friendly methods have been developed, the escape of the water has been slowed with the green fingers between the houses and the escape in the parcels has been directed to the canal opened next to the Eco-Viikki area. The flow of water was slowed down with the canals and planting, and at the same time, it was tried to improve the quality of the water before

reaching the natural protection area and the sea. Ecological residential area (Eco-Viikki Green roof and water permeable materials and floor coverings should be preferred for rainwater control and collection. Due to the insufficient infrastructure systems in the cities, the accumulated rain water can turn into flood floods, it cannot float under the ground due to impermeable pavements and underground waters cannot be renewed (Jayasuriya, Kadurupkune, Othman and Jesse, 2007). If the coated surfaces are impermeable, they should be directed to the green or watery zone with at least a slope at which water flow can be provided.

- Conversion: Use of wastewater as fuel by recycling: Biogas is obtained from the waters in the waste facility in Stockholm Hammarby Sjöstad. The remaining waste water is sent to the central heating system in the district. After the water coming into the system is used for heating and cooling the houses, it is poured into the Baltic Sea by turning the turbines in power stations (Manisalı, 2011).

Renewable Energy Use

- Use of Renewable Energy in Transportation: To establish renewable energy stations in order to increase the use of renewable energy in the traffic flow.

- Renewable Energy Use in Heating and Cooling: In Stockholm, which pioneered the establishment of an infrastructure system that could distribute the heating and cooling system from four major centers to the entire city 50 years ago; Approximately 80% of the total energy required for heating is provided from renewable fuel. Thanks to this system, 593 thousand tons of greenhouse gas emissions have been decreased since 1990. The cooling requirement is realized by using cold lake and sea water in the technology using the same system and the same pumps. This cooling system reduces the emission of approximately 50 thousand tons of carbon dioxide annually (Metin, 2012).

- Alternative energy use: Wind energy: Alternatives should be considered to provide the energy required for urban life from clean sources. Wind energy is one of these alternatives. Wind energy can be used in regions where wind power plants are suitable to be established. For example, it has been planned to provide electricity to more than 12.5 million people by building the wind turbines in the open sea, since it cannot find an open and wide area where London wind turbines can obtain efficient energy from the wind turbines, as well as increasing the need for energy in the wind farm in London Array (the world's largest open wind farm, 2015).

- Alternative energy use: Photo voltaic panels added to the structures: Electricity production can be provided with photo voltaic

panels added to the structures. Energy gain can be achieved by placing solar panels or photovoltaic batteries by giving the roof slope suitable for the structures located on the southern slopes, especially in sunny regions.

- Alternative energy use: Solar energy: For example, the project, which will be implemented by İzmir Aliğa district municipality, is intended to be an example of renewable energy use by ensuring the use of solar powered navigation vehicles on the coastband (Aliğa Municipality strategy report, 2012).

Traffic Management

- Energy Saving: Lightening the traffic load and saving energy by managing the traffic.

In order to alleviate the intensity of the traffic, by making continuous publications on the current traffic situation with communication tools such as internet, TV and Radio, to prevent traffic congestion and to make criminal practices to alleviate the traffic load. Example: There is an advanced Traffic Management Center for permanent traffic control and broadcasting in Stockholm.

In addition, continuous information is broadcasted about the central radio, internet and mobile services and the current traffic situation. In order to prevent traffic around Stockholm and 138, a congestion penalty has been imposed on August 1, 2007. In this direction, there is a system that recognizes plates and controls the congestion at all city points and gates. Every vehicle entering a congested area pays a certain amount of penalty. Traffic in the city center has been reduced by up to 14% and air quality has improved by 2-10%. (The capital of Europe, b.t).

- Environmental Pollution Reduction: Using environmentally friendly vehicles in traffic

To minimize environmental pollution, to reduce the sales market of old vehicles that pollute the environment, especially in large cities where traffic is very heavy. For example, the “Clean Vehicle in Stockholm” project was launched by reducing the sales market of old vehicles that are harmful to human and environmental health, pollute the environment, make noise, and increase greenhouse gas emissions. More than one third of all new vehicles sold now have the status of reduced environmental damage vehicles.

Spatial Design Applications

- Incentive: Encouraging green architectural practices

Green architectural designs should be given priority, especially in new construction areas. Necessary conditions should be provided to encourage green architectural practices. For example, economic incentives

are brought to the fore by providing energy-efficient awareness programs supported by businesses and 'green' improvements for property owners' buildings. In Curitiba, Brazil, construction companies whose projects include green spaces are tax-exempt, thus increasing the amount of green spaces in the city is encouraged. Another example of application that is important for ecological benefit is the Branch of the Ballard Branch Library Building in Seattle, USA. The main purpose of green roof installation in the library building is to attract the attention of the society to green design and to instill sustainable design and environmental awareness to the society by making the facility a dynamic teaching tool. The Ballard Library Project shows that a green roof may exist in Washington with a modest budget. Sustainable design, combined with an extraordinary architecture, makes a significant contribution to the benefit of society. The Seattle Public Library's Ballard branch demonstrates a range of sustainable design strategies such as photovoltaics integrated into the building, moving windows and recycled materials. The roof structure has a parabolic shape and is irrigated with a drip irrigation system” (Erkul and Sönmez, 2014).

- *Education: Expert training on green architecture*

In order for the applications on green architecture to become widespread, first of all, training of specialists is required for local government institutions. Then, architects and engineers who practice with the contribution of the professional chambers can be trained on this subject. Thus, green architectural design applications requiring expertise can be made widespread.

- *Incentive: Encouraging green roof applications*

Climate change, the symptoms of which we can observe today, has been accepted as a scientific reality in the world. In this respect, green roofs are of great importance for the sustainability of ecological balance” (Erkul and Sönmez, 2014).

Green roof systems allow the management of rainwater in environmental and ecological terms. In urban environments, the use of materials such as asphalt roads and concrete limits the permeability of rainwater to a large extent. However, green roofs create an environment for the absorption and transmission of rainwater. Green roofs play an active role in reducing rainwater flow where the impermeable surfaces exceed 40% in urban areas. Another issue that green roofs benefit is the ability to absorb and filter air pollution. Plants can also absorb gaseous impurities due to the presence of ion-retaining materials in their tissues (Erkul, & Sönmez, 2014). Therefore, if possible, transformations to green roof should be encouraged in existing buildings. Thus, it will be possible to provide the green areas needed in the cities, even if partially, on the roofs and also have positive effects in terms of carbon emissions in the air. Local

governments should develop elements that encourage green roof applications in building construction and repair. The Chicago City Hall, located in downtown Chicago, is 33 meters above the streets of the city with a quarter-hectare roof garden, exhibiting extensive, semi-intensive and intensive green roof types. The 1.885 m² green roof is located on the 11th floor roof terrace. Although the building is approximately 100 years old, green roof application was realized. The project, which was carried out in 2002, has won the NEVER professional achievement award. The primary purpose of the application is to ensure that common roof applications become widespread (Erkul and Sönmez, 2014).

- *Orientation and design suitable for climate*

In order to provide the necessary comfort in human life; buildings and streets need to make the most of the sunlight. The parts of the buildings in the settlement that are exposed to the wind should be small surfaces or deaf areas as much as possible and the necessary thermal insulation should be done. Long fronts should be positioned in the southeast direction. Energy efficiency is provided by obtaining self-sufficient energy instead of receiving energy from outside by correct positioning of buildings in ecological settlements. For example, the high-rise buildings in the booth town of Bo01, Sweden, are located at the edge of the area to prevent strong winds from entering the interior. Attaching importance to orientation in accordance with climate conditions in the planning process saves energy in terms of heating or cooling. For this reason, priority is given to ensuring proper orientation in buildings during the planning and zoning application processes.

- *Preferring applications that alleviate heat load in architecture*

In architectural applications, climate conformity can be provided with special design preferences. For example, the use of materials that reflect light and sun rays on the building surfaces does not contain unnecessary heat load in the building, thereby preventing the formation of a heat island.

- *Lightening the heat load with landscape arrangements*

The water element, which is distributed throughout the settlement to create recreational areas, provides cooling and provides unwanted heat load in the air and provides natural air conditioning. Criteria in ecological settlements; ecological corridors, green bridges, green corridors entering the city from the countryside, wind walls, coverings that can be opened and closed for natural ventilation, roof gardens, and technological elements directed towards the sun as a result of climate analysis.

- Sample designs

The implementation of exemplary projects that are sensitive to climate conditions and reflect the principles of ecological sustainability is very important in terms of both the promotion of these types of projects and their encouragement. For this reason, such sample projects should be realized. There are many examples of such applications. Compliance of Urban Planning Principles with Ecological City Management Principles

- Walkability: Attaching importance to walkability in urban planning and urban design studies

In the planning and design stages of the cities, arrangements should be made that encourage walking rather than driving. For the use of cars that cause environmental pollution and fuel consumption, public transportation should be given importance in the planning of cities and cities should be planned by considering the walkability criteria (Özkan ,2017). In China, the city of Dongtan is built by a bicycle road, a pedestrian road network. Channels, lakes and marinas have penetrated into the city, both diversifying transportation opportunities and creating recreation areas for the living. Those who visit the city park their cars outside the city parking lot connected to the transportation network and reach the city by public transport or on foot.

- Planning of bicycle paths and encouraging bicycle use

Bicycle use is one of the most important tools to limit car use. Since it is environmentally friendly and occupies a minimum area on the streets, especially in cities where there is a low slope, bicycle road planning should be included in the transportation planning agenda, and arrangements should be made to encourage bicycle use, and bicycle use should be encouraged. For example, in the pedal camp project of the municipality of Seferihisar, which could be an example of this practice, it created a camp area to support the use of bicycles and serve the users of the public and visitors. With this project, the importance of supporting the healthy and natural life and the use of bicycles in the fight against environmental problems were emphasized, while contributing to the efforts to improve the quality of life in Seferihisar. Within the scope of the project, which is planned to be implemented in Akarca, a camping area has been created for bicycle users. Bicycle users will be able to meet their daily needs in this area as well as benefit from bicycle repair and maintenance units. In addition, a fully equipped camping area will be put into operation within the scope of the project.

- Compact urban settlement

The quality of public open space has become an important issue recently and has been demonstrated by many studies. It has been argued

that urban forms are more suitable for sustainable urban developments (Alpak et al.). Because in the compact city, the dependence on the vehicle will be less as the functions will be located closer together, thereby reducing the use of vehicles. In addition, the intensive compact development of the city will allow the protection of the agricultural areas and natural areas around the city.

Protection of natural areas and agricultural areas

Organic farming is carried out in the agricultural areas around Dongtan city of China and the food requirement of the city is met from here. Waste from the city is used as fertilizer in these lands and for soil structuring. As part of the development activities of the Seferihisar Municipality, it is planned to create a nature park with many examples in the world in order to protect and promote the wetland and dune ecosystem (Azmak Delta) within the borders of the ancient city of Teos in Sığacık District of Seferihisar. Sığacık one of the 305 important natural areas in Turkey - Doğanbey delta Located on the beach, fish, sea birds and plants on a global scale is an important habitat. Delta is unique due to the intertwining of archaeological remains and biological wealth. This nature park has been proposed as the destruction of the wetland and dune determined as the project area has reached dangerous levels over time. The survival of these ecosystems as yet unknown importance and adequately protected from natural angle is of great importance to protect the biodiversity of Turkey. With this project, the protection of Teos wetland and rehabilitation of the dune will be ensured, and the continuity of information and protection activities will be ensured with the visitor center to be established.

• Promoting urban gardens

Example: With the “Seeds Campus” campaign by the Association for the support of ecological life, it is aimed to provide training on the establishment of gardens and composts in the campuses of public universities (institute, faculty, college etc.), introduction to ecological life and building a community. In the following years, the project is planned to be reproduced with primary, high school and / or municipalities / mukhtars.

• Applications of urban furniture (street lamps) working with solar and wind energy

Example: In Copenhagen, 12-volt energy is provided with small wind turbines placed at the ends of street lamps, and the illumination is provided in the streets without consuming any additional electricity. The panels also have the opportunity to work on the days when the wind is not strong by charging the batteries in the days when the wind is high.

- *Green urban environment formation*

Example: With the implementation of Green Band in Vitoria-Gasteiz, urban green areas have doubled since 1974 today. The urban green areas planned by considering their equal distribution in the city have played an important role in achieving the 'bringing nature to the city' by integrating with pedestrian and bicycle roads.

- *Air Management: Monitoring and management system for clean air*

Example: The Vitoria-Gasteiz management implemented the Air Quality Management Plan in 2003, taking into account the importance of clean air for a healthy and quality life. The plan, which aims to reduce and prevent air pollution, determines that 284 days of clean and high quality air per year is monitored by monitoring systems.

- *Creating buffer green spaces between residential areas in cities and intensive urban uses such as ring roads or industry*

- *Creating energy action plans for the whole city*

- *Removing ecological footprints across the city*

Example: In order to follow the ecological footprint of Dongtan, the city's sustainable development is planned with the plan decisions to be made by deciding to balance the natural resources and consumer demands. Within the scope of the project, the new program named "Resources and Energy Analysis Program" aims to measure the resources that Dongtan residents will use and thus reach the area required for this demand. Dongtan's eco-friendly design is expected to achieve sustainable ecological footprint settings (Wood, 2007).

- *Protection of natural and biodiversity rich areas such as coastal areas, wetlands and basins and management plans for these areas*

- *Preparation of zoning plans in accordance with the principles of sustainability*

It is necessary to prepare zoning plans and ensure their sustainability in order to create a healthy and safe environment with high quality of life by preserving natural, historical and cultural values.

Social Activity and Education

- *Private sector education*: Providing trainings to industry officials about environmental awareness

- *Expert training*: Providing environmental legislation training to local government experts

- Training centers: Establishing an environmental training center, providing training, establishing distance learning and electronic learning networks

- Providing environmental education programs in schools

- Promotion: Development of environmentally friendly systems through the establishment of Eco - Technology fairs in the city.

- Cooperation: Cooperation with universities to implement developments in ecological systems

- Training with social activities: Providing trainings to give environmental awareness through social activities such as theater.

- Raising awareness of local people

In order to develop an ecological city concept, it is very important to educate the people of the city in this regard. By means of education, a very strong ecological structure awareness can be gained to the people of the city and the people of the city can be ensured to participate in environmental activities and work for the city to stay healthy (Mumcu, et al,2019).

- Rewarding: Neighborhood environmental award

With the waste collection system that can be created at the neighborhood level, solid waste can be separated and collected. In addition, "Neighborhood Environment Award" studies can be carried out to encourage the public.

- Arrangement of environmental festivities

- Distribution of posters and brochures about the environment

- Creating Alo waste line

- Cloth bag distribution to limit the use of plastic materials

Management Activities

- Creating environmental policies

Local governments should firstly introduce sustainable development oriented environmental policies for their district boundaries. For this, an area analysis should be made within the boundary of the service for each district, and a basis should be established for environmental policies to be established by revealing the existing structure.

- Financial support

Central governments are required to provide financial support for infrastructure, especially to district municipalities with a population of

50,000 or less. Provincial and municipalities need to strengthen their capacity to prepare and implement environmental infrastructure projects.

- Determination of quality limits

Comparing the results to be obtained from measurements on air, water quality and noise level across the district with standards and setting environmental quality limits. Environmental assessments in all local units

- Conditioning

Imposing sanctions such as planting trees for licensing new constructions

- Reporting local government units' policies and strategies on healthy urban development and implementation

- Establishment of mobile air pollution monitoring stations

Table 1: Environmental Sustainable Management Guide for Local Governments

RECOMMENDATIONS ON WASTE MANAGEMENT
Prevention
Decomposition
Conversion
Promoting
Organizing campaigns for solid waste and waste oil collection
Creation of battery collection points throughout the district
WATER MANAGEMENT
Use of Renewable Energy in Transportation: To establish renewable energy stations in order to increase the use of renewable energy in the traffic flow.
Alternative energy use: Photo-voltaic panels added to the structures
Renewable Energy Use in Heating and Cooling
Alternative energy use: Solar energy
Alternative energy use: Wind energy
TRAFFIC MANAGEMENT
Energy Saving: Reducing traffic load and saving energy by managing traffic
Reducing Environmental Pollution: Using environmentally friendly vehicles in traffic
SPATIAL DESIGN APPLICATIONS
Incentive: Promoting green architectural practices
Education: Expert training on green architecture
Incentive: Encouraging green roof applications
Orientation and design suitable for climate
Preferring applications that reduce heat load in architecture
Lightening the heat load with landscape arrangements

Table 1 (continued): Environmental Sustainable Management Guide for Local Governments

PROVISION OF URBAN PLANNING PRINCIPLES TO ECOLOGICAL CITY MANAGEMENT PRINCIPLES
Walkability: Paying attention to walkability in urban planning and urban design studies
Planning bicycle paths and promoting bicycle use
Compact urban settlement
Protection of natural areas and agricultural areas
Promoting urban gardens
Applications of urban furniture (street lights) working with solar and wind energy
Green urban environment formation
Air Management: Monitoring and management system for fresh air
Creating buffer green spaces between residential areas in cities and intensive urban uses such as ring roads or industry
Creating energy action plans for the city as a whole
Protection of natural and biodiversity-rich areas such as coastal areas, wetlands and basins and management plans for these areas
Removing ecological footprints across the city
Preparation of development plans in accordance with the principles of sustainability
SOCIAL ACTIVITY AND EDUCATION
Private sector training: Providing trainings to industry authorities about environmental awareness
Awareness of local people
Rewarding: Neighborhood environmental award
Arrangement of environmental festivities
Cooperation: Cooperation with universities to implement developments in ecological systems
Education with social activities: Providing trainings for environmental awareness through social activities such as theater.
Providing environmental education programs in schools
Training centers: Establishing an environmental training center, providing training, establishing distance learning and electronic learning networks
Expert training: Providing environmental legislation trainings to local government experts
Distribution of posters and brochures about the environment
Establishment of Alo waste line
Introduction: Development of environmentally friendly systems through the establishment of Eco - Technology fairs in the city.
Cloth bag distribution to limit the use of plastic materials
Expert training: Providing environmental legislation trainings to local government experts
MANAGEMENT ACTIVITIES
Creating environmental policies
Financing support
Determining the quality limits
Conditioning: Imposing sanctions such as planting trees for licensing new constructions
Creating environmental policies
Financing support
Determining the quality limits
Reporting the local government units' policies and strategies on a healthy urban development and their implementation
Setting up mobile air pollution monitoring stations

DISCUSSION AND CONCLUSION

Taking the concept of sustainability together with the city concept is a very new process. The result of the Habitat II Summit held in 1996 was the importance of the settlements and living spaces that made a sustainable life possible. Although there is no clear definition of what sustainable urbanization is, three elements stand out when the general definitions made

about this concept are deducted. The first of these elements is to solve the problem of increasing the living standards of the people living in the cities both in the ties with the city and in the public services in the city.

Secondly, for the sake of sustainability, the city is strengthened in transferring its whole to the next generations. Finally, it is the question of using the environmental values of the city beyond the capacity limit without being transformed and questioning on the basis of the production and consumption standards that the city is the primary responsible for the transformation of these natural resources. In this context, sustainable urbanization approach includes all environmental, social and economic factors that are affected by urban development and that affect urban development. seeks to combine economic and social development with the aim of environmental protection and improvement; it requires the form of development to be decided by participatory processes. One of the prominent elements in the concept of sustainability in urban management is to increase the living standards and opportunities of using public services in the city where the inhabitants live.

In the 21st century, as the concept of governance gained importance and started to be adopted, local governments started to have a significant say in the name of city administration. In the study mentioned the environmental management system in Turkey and considerations are the result of a lack of available indicated. Elimination of these deficiencies has been tried to be created as the " management guide for environmental sustainability ", which is the main purpose of the study and which will be utilized in urban management. In this regard, the general order of ISO 14001 and EMAS systems, which are the standard setters in the environmental management system, are examined, the purpose, principles and operations of the systems are examined. Based on these standards, a guide has been created to be an example for all local governments and to guide them. The existing environmental management standards have been mentioned and the benefits of environmental management to the local and the city have been presented as suggestions, and what has to be done in terms of planning, design, management and social activities have been presented as suggestions, and efforts have been made to strengthen what should be done with explanations and examples supporting the suggestions.

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CHAPTER 5

**INTEGRATING URBAN INTERIORS
WITH PUBLIC SPACE USERS**

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INTRODUCTION

Similar to the small-scale volumes in building interiors, public spaces also have urban interiors that are customized and defined with the same approach. Today, in the built environment, public spaces, where users are in contact within the framework of their socio-cultural affiliation, are being reconsidered due to current needs and possibilities. This situation has led to the emergence of urban interiors as a new and multidisciplinary practice field. The target community of the designs created by many different disciplines working together is determined as public space users. In contemporary arrangements, in areas left as public spaces, traditional understanding from the past, leaves its place to current needs and trends. This paradigm change has led to the prominence of urban interiors that respond to limited-term needs due to the temporariness or the turn to be out-of-date situation of the target subject. The aim of this study is to create a conceptual framework for effective integration of urban interiors which are spreading out day by day, with public spaces and public space users. In this context, a literature review on concepts of "urban interior" and "public space" has been conducted and the importance of integration of urban interiors with public space users has been discussed; methods to achieve this integration have been proposed and finally, urban interior project cases have been examined in order to embody these methods.

URBAN INTERIORS

Although attempts to establish a relationship between interior and the city are not new, industrialization, globalization, migration, and private

and public, spatial and temporal relations affected by digital technologies have transformed interior and urban environments (Attiwill, Giunta, Fassi, Crespi, Hermida, 2015). The interior is basically sensory perceived spaces that are limited by a cover or inclusive elements, separated from the outer space, and specialized. The volume defined by the interior spaces is in human scale, and all equipment within the space can be perceived physically and directly (Başarrı, 2015). The concept of urban interior, on the other hand, transcends the physical boundaries of the interior space and appears as an interdisciplinary field of study with its characteristic to be a public space.

In the last 50 years, the discipline of interior architecture has been the scene of inquiries about its fields and limits of activity in relation to transformations affecting the core of their professional interests. While the concept of "Interiority" transcends the boundaries of the home environment in order to spread to the public spaces of urban mobility, communication and mass consumption, interior architecture and design have begun to expand and adapt their thematic horizons by transcending traditional spatial boundaries. As urban spaces began to involve domestic indoor rituals and habits, a coherent part of the interior culture began to focus its attention on urban spaces as a whole and defined a new research approach with the concept of "urban interior" (Leveratto, 2019). According to Attiwill (2011), urban interior creates temporary habitation spaces for urban users and these users produce an environmental system consisting of objects and spaces as inanimate actors. The interior design discipline has expanded its boundaries of action by accepting the interior spaces of the city as a practice field. Interior practice meets current requirements with acceptable independent answers. "In line with the paradigm that Transition is a stable reality; also fluidity is a permanent condition, it can develop a different perspective on living spaces for the communities we belong to. According to Alessandro (2006), *"while old cities are settlements occupied and inherited by the barbarians, today's cities become metropolises and global networks which need multi-ethnic areas to ensure integration, where the services differ from being unique centric, and include complex issues of mobility leading public spaces to vanish."*

In this context, a new role can be defined for urban interior design as the initiator and promoter of processes that have the creativity to re-sense and reallocate public and gathering spaces. In this scenario, interior design practice acts as an "overwriting logic" in expertly designed spaces that enable the temporal settlement process. Simultaneously, these physical and cultural dynamics lead to reconstruction. Users constantly activate the process of rebuilding and projecting this urban interior, as if using a semantic and usage-based interface. The concept of urban interiors is therefore understood as a performance-dependent update of public spaces

(Guinta, 2009). Urban interiors can be defined as a program that can accept user data without changing its own structure. The project determines the urban interior shaped by user actions and the system of constraints that structure the potential use of the space and its objects.

In order for urban interiors to function properly, it is essential to integrate with public space users and fully meet their needs. Accordingly, it is useful to redefine the concepts such as urban space and public space functions in the context of public space user. Urban spaces must be responsive, democratic and meaningful. Democratic spaces protect the rights of all users. These rights can be used by all user groups and allow both freedom of mobility and temporary ownership of these spaces (Carr, Francis, Rivlin, Stone, 1992).

URBAN INTERIOR AS A PUBLIC SPACE

Architecture and design culture cannot be considered independent of the social, economic, political and cultural structure of the society in which it exists. In parallel with the formation of society, architectural spaces also evolve and transform in accordance with the social structure (Tunali, 2019). In the 1970s, the importance of the concept of urban interior began to be emphasized again within the framework of activities for meetings, exchanges and presentations by locating people at the center of the space. This process emerged primarily with the idea of pedestrianizing city squares. With taking of traffic out of the square, pedestrian roads feeding the squares and the rearrangement of the square and its immediate surroundings as centers of attraction, public spaces have started to gain importance again. This situation has spread from city centers to urban environments and borders over time. In the continuation of the organization of public spaces defined in time according to the needs of certain activities and certain social environments, the unused idle areas in the city (bridge piers, under viaducts, etc.) began to be organized and brought to the city for the same purpose.

The aim of meeting the common opportunities and needs of the day, which shaped the public spaces of old cities, was replaced by new needs arising from the changing and developing demographic, socio-cultural and technological developments by the 20th century. The expansion caused by the wave of migration towards the cities has caused the disappearance of the city borders, as the distances between the settlements are widened, the pedestrian transportation has taken over by means of transportation and public transportation, this situation has brought about the asphalt roads where the values such as landscaping with special aesthetic value are lost and the creation of ordinary and abandoned unsecured public spaces. This movement caused the cultural and commercial activities, which were

previously carried out in urban interiors and increasingly in public spaces, to shift into closed spaces and into buildings (Augé, 1995).

In the last 20 years, attempts to design interior spaces in urban areas have taken many forms. The tools, processes and languages implemented in these processes vary considerably. The degree of adherence to the characteristics of the public space in which the urban interior is located, the spatial scope or the physical limitation tools used are important actors of this diversity. However, beyond any methodological distinction, the most important common purpose of these projects is that they share a specific approach that focuses on the task of "making the city livable" (Leveratto, 2015). In other words, they aim to provide people with the opportunity to adapt, use and transform the space they live to their daily activities both functionally and symbolically (Leveratto, 2016).

HOW TO INTEGRATE URBAN INTERIORS WITH PUBLIC SPACE USER?

The concept we call interior emerges not as the opposite of the exterior, but from its state of genetic content of innerness; it stems from its origin and its nature as a space. The spatial experiences that characterize architecture start from areas such as streets, squares, parks where people define spaces (Zevi, 1948). Although each defined volume creates a threshold or a boundary that contributes to the production of different types of spaces in the spatial continuity of the city, when talking about a movement from interior to exterior, it actually emphasizes the movement from one interior to another, from the room of a building to the room of the city. With the widespread and implementation of this discipline, the specific interior design approach in public spaces has been approved and proven by many recent studies and practices and investments in this field. Projects designed within the framework of the concept "the rooms of the city", emerges as current regulations that will give an inclusive response to the needs of the area, which includes an interactive link and experimentation between the social environment and the user, within the prevailing conditions; but not as the improvement works such as the floor and landscaping and adding urban furniture to an existing public space. According to Guinta (2009), this can be achieved by using urban design, interior architecture, industrial design and current media together. First of all, every public space can be considered as a potential action area. In this context, the relevant public sphere evolves into an expanded action area based on its relationship with its immediate surroundings. At this point, the user and the designer together define the urban interior within the framework of the real needs and possibilities of the user. Based on the permanence of the public space and the definition of a field of action, urban interior design describes the definition of this action and the physical state of the public space during the validity of the action. The unpredictability

arising from personal creativity is very typical in such projects that interact with spontaneous behavior. Projects designed in this way support the idea of perceiving the public space as a threshold, while transforming it into a space where the intended innovation or service is tested.

Çolak (2012) examines the functional characteristics of the public space in terms of psychological, social, economic needs and mobility. Accordingly, It is expected from a public space to:

- Respond to psychological and sensory needs (crowd or isolation, silence or mobility)
- Provide opportunities for social interaction needs (individual or collaborative ventures, programmed or serendipity encounters, information exchange, cultural and educational activities)
- Meet the economic requirements (commercial activities)
- Allow for useful displacement requirements (public transportation, bicycle, pedestrian, disabled, elderly and children displacement) of its users. (Çolak, 2012).

According to Guinta (2009), the quality of a contemporary urban space, or in other words, the use of it as a hospitable and pleasant place is directly proportional to the number of activities performed in its interior. The transition from urban place to environmental system can be achieved by the designer connecting the three actors of the system (social component, objects, space):

- Social component: It can be individual or society. The social component demands spaces that will enable them to be in contact with the society both individually and in both cases, the space is expected to provide a sense of belonging.
- Objects or non-living actors in the residential area: Depending on the content of the space, they are included in the design according to the knowledge of how the components in the space are operated by the user in the semantic common life framework.
- Space or inclusive system: If "context" is the valid logic that defines the relationship between spaces, this interactive situation creates a threshold that we can call a kind of mixed interface space (Guinta, 2009).

In order to increase the effect of architecture on the perception and behavior of individuals and society, the urban interior design process should be handled with many different disciplines (sociology, psychology, anthropology) and knowledge (new materials, technologies, digital systems, use of sound and light). The use of non-traditional architectural equipment, language and practices, such as the interactive participation of artworks in surface and object design into architectural design, without the

concern of containing a political, historical or religious message, shapes the resulting form, function and meaning.

Enlightened by the data given, The characteristics that urban interior design should have are listed ensuring the integration of urban interiors with public space users. These characteristics can be summarized as:

- Being experimental and interactive,
- Using up-to-date technology, materials and knowledge,
- Being temporary, one-off and unusual,
- Having the design value that will serve the freedom to experience all the applied design objects, contrary to the conventional approaches we are used to in public spaces such as "do not step on the grass", "do not enter the pool", "do not touch the digital screen",
- Having educational, inspiring, striking, aesthetic and architectural value,
- Aiming to re-establish social cohesion and sharing as specialized urban interiors located in the space, despite the gradual loss of importance of the usage purposes of public spaces from past to present,
- Thinking focused on games, entertainment and sincerity rather than seriousness and formality,
- Creating a feeling of belonging and intimacy,
- To create environments where people from different age groups and different socio-cultural backgrounds can come together and share and exchange,
- Contrary to the demands such as individuality and privacy, which we look for in conventional building interiors, being designed in an inviting, easily accessible, highly permeable structure without any obstacles.

Today, contemporary interior-making practices act as a mediator between two different dimensions and create a physical and porous interface between the mere spatial data of urban architecture and the reality of living there. Therefore, the quality of urban interior designs can only be measured by their ability to connect or adapt to both the hollow shell of the city and the real lives of people and to establish a meaningful connection between them (Leveratto, 2019). The methods that can be followed in creating an urban interior with the aforementioned characteristics, that is, ensuring the integration of urban interiors with public space users, are diverse. These methods can be summarized as:

- Creating spontaneous contact on the circulation axes determined by individuals depending on the usage habits in public spaces,
- Designed at a location to draw attention to a specific area, structure or space,

- Handling urban furniture (street lamps, garbage can, benches, etc.) as objects placed in the center of attraction by being designed for purposes such as sustainable energy, ecological value, recycling, multi-functional use
- Placing a work of art or an interactive service vehicle equipped with digital systems, different light and sound games,
- Being user-oriented, inclusive and encompassing, supporting the purpose of learning and sharing within the game,
- To create a sense of familiarity and belonging with the use of accessories such as carpet, sofa, etc. that we use in our daily life or with the use of familiar traditional architectural patterns,
- Offering opportunities such as reshaping, rearrangement and placement of experimental objects and outer shell within the urban interior with the help of physical or digital systems,
- Being flexible, modular and changeable in order to create environments where people from different age groups and different socio-cultural backgrounds can come together and share and exchange,
- Accessible from multiple points, without any physical obstacles, collective design,
- Acting together with different knowledge disciplines.

Today, urban interiors shaped and specialized with their architectural designs and equipped according to the relevant activity, have gained importance due to the disconnection of interest for public spaces with the concern of identity message expanding around symbols such as statues, busts and monuments bearing a symbol of belonging and identity. Experimental studies and experiences show that the urban interior arrangements made to meet the needs and activities are also aimed to be focal points of architectural and aesthetic appeal.

PROJECT CASES FOR URBAN INTERIOR-PUBLIC SPACE USER INTEGRATION

In order for urban interiors to be functional, democratic and meaningful, it is essential to integrate them with the city and the inhabitants of the public space. Urban interiors that respond to the current needs of the city dwellers find their true meaning. In this context, the urban interior-public space user integration methods, the conceptual framework of which is drawn in the study, has been concretized with various project cases.

'The Cola-Bow'

Project Tag: 'The Cola-Bow'

Designer: Penda

Year: 2013

Location: Beijing / China

Purpose of Use: Installation

The Cola-Bow installation designed by Penda is a work using more than 17,000 plastic bottles. The use of a familiar form inspired by the logo of a Cola beverage company has provided belonging and intimacy. One of the aims of the design is to draw attention to environmental pollution and recycling of waste. It was aimed to attract attention and participation by giving one Cola drink to those who brought 10 empty bottles in the field. It is possible to see criteria such as the use of waste material, the design of a top cover in a form familiar with this material, the inclusion of people in the subject for the supply of the material to be used, creating awareness and being the center of attention in this example of urban interior (URL-1).



Figure 1. 'The Cola-Bow' Exterior View (Photo: Penda, URL-1)

Serpentine Gallery Pavilion

Project Tag: Serpentine Gallery Pavilion

Designer: Bjarke Ingels BIG

Year: 2016

Location: London Hyde Park Kensington Gardens

Purpose of Use: Architectural Design Prototype

Bjarke Ingels' firm BIG aimed to create a three-dimensional volume in the 2016 Serpentine Pavilion by using brick-like fiber building materials combined in a locked system, emphasizing the zippered state of a wall. The material used is specially manufactured using fiber and resin, which are highly resistant however very light. The property of the building material used is high light transmittance. With the use of this innovative material, it is aimed to experience new approaches in buildings and architecture within the urban interior created by the form. Particularly, the effect of light filtering from outside to inside and from inside to outside with night lighting is very interesting. While the gallery serves as a café and event space during its program, it creates a center of attraction with its material, light and design form, and the urban interior is integrated with the public space users (URL-2).



Figure 2. Serpentine Gallery Pavilion Exterior View (URL-2)



Figure 3. Serpentine Gallery Pavilion Interior View (URL-2)

Camera Chiara

Project Tag: Camera Chiara

Designer: Annabel Karim Kassar

Year: 2015

Location: Milano

Purpose of Use: Energy Exhibition for Creativity / Interni

The "Open Room (Camera)" designed by architect Annabel Karim Kassar, who was invited to the Energy for Creativity Exhibition organized by Interni magazine, is not only an architectural work, but also a work that tells about daily life in Lebanon. In the volumes in the form of old camera bellows, segments of Lebanese lifestyles emerge as the actor-participants walk in and out, wonder and think, and leave. Attracted by the light filtering through the window, the participant encounters a little interior space and a cinema installation. While the furniture inside supports the feeling of familiarity and belonging with the furniture used from the past to the present, the noisy complex structure of the city is represented by the music and different sounds from more than one sound source. Here, an attraction was created with interesting forms, and belonging was created with the materials used, people were aimed to participate interactively and the courtyard area was evaluated with a cultural activity (URL-3).



Figure 4. Camera Chiara Exterior View (Photo: Nicoló Lanfranchi, Interni, URL-3)



Figure 5. Camera Chiara Interior View (Photo: Nicoló Lanfranchi, Interni, URL-3)

CONCLUSION

The term "urban interior" seems to aim at combining two contradictory disciplines, as they recall two distinct and confined spaces. Typically referring to the built environment, the term "interior" expresses the feeling of warmth, security, comfort, well-being and hospitality that are typical of enjoying a limited and sheltered environment; on the contrary, the term "urban" refers to the spatiality of the community, that is, a sharing experience (Di Prete, 2017). The combination of these two concepts can be made possible not only by physical unity but also by the integration of urban interior design with the public space user. The changing needs of the 21st century society have caused the discipline of interior architecture to expand its scope and to consider the interiors of cities as a field of practice. In today's society where transition is a stable reality and fluidity and change are accepted as a permanent condition, the profession of interior architecture can create a reliable and independent response to the current needs of the city. Within the framework of urban interior design, interior architecture constitutes an important interface in the field of theoretical and practical experimentation because of the concept of modernity testing architectural research and practical equipment and traditional strategies, new possibilities and technologies emerging due to the implementation of innovative approaches, awareness of urgent concerns about sustainability and conservation concepts, and the establishment of local and global unity. It is observed that urban interiors have emerged as arrangements that support public spaces and their functionality as spaces that will respond to current needs beyond the traditional understanding. This situation brings along the necessity of being an inclusive and catching point of attraction for the socio-cultural environment, namely for all users of the public space, within the physical environmental conditions of the designed urban interior project. Examining the aims and methods of this integration will enable the discipline of interior architecture to approach the subject more systematically and strengthen its hand in coordination of sub-disciplines with which it will work together. Here, the most important design problem for the interior designer is to consider the city as a series of interiors where people can live intensely, leave their own traces, share their memories and be part of their daily lives.

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CHAPTER 6

**THE IMPACT OF POLITICAL ISSUES ON DESIGN
PROCESS OF NEWS STUDIO IN THE CONTACTS OF
AESTHETIC MANNERS***

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INTRODUCTION

After the industrial revolution, scientists had been working on various technological items for making people lives easier. With technological developments' support, communication tools such as telegram, telephone and radio are invented. They were started to use by people in the first half of 20th Century (Yengi, 2012). By the time people had needed to reach sufficient information more than written and audio ones. Therefore, communication tools could have transformed into visual way by the invention of television.

Television is a word of Latin origin and means "seeing distance". Hearing ability is also important for television, according to McLuhan. In this way, television constitutes the last point of human abilities. Television is a technology that frames people with the boundaries of time and space and improves the limits of their daily rush in qualitative and quantitative terms. (Mutlu, 1999). These types of communication tools not only convey information to individuals, but also decide how to think by affecting their sense organs. Thanks to these technologies that appeal to our senses, individuals internalize these tools day by day and eventually create a new culture transfer. According to McLuhan, people live in an environment composed of images and messages, and they can be instantly informed about events and images from all over the world with a device such as television. (Yengi, 2012).

* The study was produced from unpublished master's thesis "1968-2008 TRT Haber Studios Interior Architecture and Graphic Design" in Ankara University.

The idea of reaching visual information both quickly and accurately at the same time, which had made so many people excited about this technology. Therefore, people had adapted to television immediately and it has become a member of almost every family in the world since that time. Moreover, mass media had made new social area and habits for people by television (Mutlu, 1999). Technological developments are not just mechanical items; they are also strong enough to effect on people emotionally and culturally. It is believed that broadcasting is reflection of technological developments although it is the platform of public's common vision. So, television programs should have an active role in making this common vision.

News programs are the pioneers of creating public's point of view, because these television programs work like a showcase of those channels. So, people can easily understand the political, social backgrounds and the aesthetic values about that channel and also its country' qualities when they watch its news programs. On the other hand, news are respected programs by people so owners of channels are very known that effects of news on the individual. For this reason, they dealt with news studios design process more than the others. Therefore, interior and technical elements and also equipment are always more important than the other studios. There are some elements, which compose these studios and they are not there for just visual and aesthetical way. They also help to broadcasting technically. Television studios are designed with vertical, horizontal and mass elements together and also, they all have some subtitle equipment such as color, light, camera angle and graphic elements to compose the ideal studio for television programs. When examining the samples of Turkish news studio, they have been developing since from day to day 1968 although channel has struggled too many problems such as budget, technical support and political pressure.

The study was produced from unpublished master's thesis "*1968-2008 TRT Haber Studios Interior Architecture and Graphic Design*". In this article, the developments of the design process of these studios are discussed and evaluated by using the knowledge about the political, social and aesthetic values of a specially 1968- 1998 period.

THE ESTABLISHMENT PERIOD BETWEEN 1968-78

First period, which is titled "*period of establishment*", is between 1968-78, the world was influenced by right wing and capitalism system negatively (Çankaya, 2003). There were many economic crisis and political problems lived in this period. Due to this reason mass communication revolution cannot be shaped without technological production and enough budget. This period was disadvantage for mass

communication system and inexperienced countries such as Turkey. In addition, Turkey cannot be afforded the new broadcasting equipment because of this economic crisis and political problems so the equipment had got second hand from Germany in that period (Çankaya, 2003). Therefore, the mass communication journey of Turkey had started with this kind of economic poverty and downturn.

If we need to evaluate between 1968-78 TRT news studios, it is obviously seen that, studios did not have enough equipment and technical supports by the channel because priority of channel had not been interested in aesthetic manners. It had just concerned about broadcasting was technically right or not. During this period, first news and panel discussion program's studios had designed by TRT staff; it was named staff because channel had not had any interior architectures or decorators for designing. Draftsperson and workman had been composing all working about studio design. Due to lack of technical equipment and the materials, they had used similar plan, shape, background, pattern and furniture for these studios. For instance; black velvet curtain and blackboard panels had preferred materials for backgrounds because of their acoustic properties and also their prices. (The channel could not be afforded the expensive materials because of the economic crisis) Furthermore concrete was the only option for the floor so they had developed some painting technique for making different studio floors to the various programs. Another technique is that, they had to used raised floor for making some layers to the studio because these layers had added some dimension and depth for studio's perspective. However, steel framing had not used yet in that period. In order that they had used to wooden frame for raising the floor but wooden one is not strong enough to raise the layers in a monolithic way and they had raised them piece by piece. Moreover, hand they had used carpets, too for floor designing but it was not for its acoustic and also functional properties, it was just for decorating the studio in a visual way. Furthermore, stand and table design had made of blackboard panel, too but if they did not have any alternative materials, they had used either plywood or chipboard. These materials had capable of shaping easily such as cubic, curve or any shape else.

The first photo shows the first example of the TRT news studio in 1968. (Figure 1) As you see that, there are no enough visual elements, backgrounds and materials although they have enough technical equipment in those news studios. Another example is the first sample of the panel programs in those years. As it is understood from the photo, there hadn't had extra visual equipment for floor or background in that studio and also there hadn't had any acoustic panels or extra camera for technical equipment. It just had served the purpose of the broadcasting sufficiently. (Figure 2)



Figure 1: The First TRT News Studio in 1968 (A. Köksal (Koord.) TRT: Dün'den Bugün'e Radyo-Televizyon, s. Ajans-Türk Matbaacılık, Ankara, 1990, p.30)



Figure 2: The First TRT Panel Program Studio in 1968 (Rauf Denkteş Açık Oturumda TRT Photograph Service Archive No: A-713 Date: December1970 Cameraman: A. Kandemir Place: Studio A)

Therefore, that 10-years period is the first step towards broadcasting for TRT. However, they were not assertive about designing process; their priority had just managed to broadcasting.

THE PERIOD OF STAGNATION BETWEEN 1978-88

Television channels are monopolized the public serviced all around the world since 1980s. After the privatization movement, which was organized in USA, channels have been powerful and incorporated (Tulga, 2012). And Europe has started to replicate this movement. However, this movement was known in Turkey after 1980 Turkish coup (Ortaylı, 2012). Hence Turkey had met this term and color programs in 1990s. It was picked up steam, which is named “Turgut Özal Period” (Köksal, 1990). 1980 Turkish coup did not affect not only political life, but also all sectors in the Turkey. Coup was coming to a stop so it affects the

development of television broadcasting while the television channel was waited for support by Turkish government. For this reason, this period was mentioned in being “*period of stagnation*”. Actually between 1978-88, studio designs were similar to 1968-78. Although there were almost no differences such as plan, shape or technique between them and also materials and methods are repeated and copied from “*period of establishment*”, atmosphere of the studios was reflected the oppressive regime preponderantly.

Actually, the only important difference about news studio in that period is titled “*Ev Canlandırması*”. (Figure 3) These studios were designed at the request of government officials in that time. So then why they wanted to see this kind of studio? Coup term president, Kenan Evren did not prefer to attend any news programs so reporters and cameraman have been visiting him in his office. Therefore, archive footage shows us, his period news program backgrounds were always his office images. For that reason, when the government officials had to attend the studio, they were demanding a studio, which is look like an Evren’s office image. “*Ev Canlandırması*” studios had come forward like this (Anonymous, 2015). So, politician’ demands had turned the aesthetic values in that way. However, there was not enough photo and papers keep in the archived by TRT.



Figure 3: The Panel Programs in 1980s (Askerlik Konusunda Açıklamalar, TRT Office of the chief of News Photography - Film Archive No: 156 Date: 1980 Place: TRT A Stüdyosu)

Therefore, it cannot be evaluated sufficiently. Thanks to new government had accessioned after the 1980 Turkish coup so the late of 1980s had gained momentum and developed visual and techniques way by the supporting of government and the standstill period was finished surprisingly better than how it was started.

THE RISE OF THE TRT NEWS STUDIOS BETWEEN 1988-1998 YEARS

The innovation of Turkey, which was developed by privatization period and the changing of the government show itself in the studio design. First remarkable difference is that designers were searching new idea, trend, material and also implementation all around the world (Hasgüler, 2013). The material and nonmaterial supporting of the government have developed the television studios both artistic and technological way. For this reason, designer had led the way by most avant-garde studios in that period. Turkish channel had met mdf, pressed steel and adhesive foil in that period, too. Another new material was steel construction, which has been imposing the burden on the stage and it had taken wooden frame place to making monolithic finish slabs.

The specific examples of those studios are shown above such as Figure 4 represents the new kind of new materials usage such as adhesive foil and also the new geometrical shapes and angles for making different perspectives in backgrounds. Figure 5 is the example of the raising floor usage, which has been imposing the burden on the stage by steel construction. And also, Figure 6 represents the variation of pressed steel usage in news programs furthermore this studio is the most Avant-garde studio in TRT history. However, pressed steel had not been preferable material in news studio because of its reflection problems.



Figure 4: Gündem Programı (TRT Office of the chief of News Photography - Film Archive No:589 Date: December 1989 Place: Studio A)



Figure 5: Anahtar Programı (TRT Photograph Service Archive No: E117 Date: October 1996 Cameraman: H. Öğretmen, Place: Studio Arı)



Figure 6: Perde Arkası Programı/ Yeni Dekor (TRT Office of the chief of News Photography - Film Archive No: 1653 Date: November 1996 Place: Studio Orkut)

So, 1988-98 years have called “*rise of the TRT news studio*” furthermore private channels establishment have raised the importance of TRT. Private channels have firstly imitated and then competed to the TRT by their broadcasting and designing style. Nowadays TRT is still working like a school and it is still a cult for all the channels in Turkey. News studios are directly proportional to shaped not just technological developments and using new materials but also social culture, political structure and economic issues.

CONCLUSION

The concept of news studio design takes place in several technical and visual disciplines and every design has its own peculiar conditions. The major conditions of news studio design are composed by social, political and economic situations in their country. This work examines the definition of news studio development process. This process had composed the news studios design language in Turkey. The archive data and the information about these periods' political and aesthetic conditions show obviously this development. These conditions play a very important role

For this reason, when examining any country' news studio it can be found some clue about their period or social, political and economic situation. This study is dealt with this 30-years of TRT news studio design developments to show these developments according to these manners. Design process is not just about aesthetic values or trend material usage. It is also shaped with all of the elements because this combination is showed us all the identification and development process of the countries.

Today, news studio design is becoming a new form by technological developments in Turkey, like other countries. Virtual studio and 360° studio are the new results of this development process. These new studio examples show that; news studio is not just become by spatial and visual design elements; it is also represented electronically by space and time. Therefore, traditional role of design development is like a step without interruption increasing effort that leads to construction elements. These developments affect the news studio design process positively and studios follow a new path by the help of this kind of new technology.

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CHAPTER 7

**THE PROTESTANT BUILDINGS IN TURKEY/ KAYSERI
CENTRAL MISSION STATION IN THE 19TH CENTURY:
WITHIN THE SCOPE OF AMERICAN BOARD'S
MISSIONARY MOVEMENT**

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INTRODUCTION

In 1808, a group of college students led by Samuel J. Mills founded an association named “The Brethren” in Williamstown. Their aim was to crusade against moral and spiritual darkness in Asia, and to start a missionary movement against the people who were heathen, and to carry the Bible to faraway places. This association formed a driving force for the missionaries first in Williams College, and then in the Andover Theological Seminary. Led by the board of Andover Theological Seminary, the American Board of Commissioners for Foreign Missions (ABCFM), which started its movement in Boston, was founded in 1810. After a short while from its establishment ABCFM started to collect necessary donations for financing its operations abroad. In this scope, the agency created mission territories in South America, Asia, Europe, Africa, India, China, Japan, and Ottoman Empire (Figure 1). Beginning from 1820, as seen as a terminal pair to Asia, the Ottoman Empire became one of the important operation areas of ABCFM (Strong, 1910, pp. 6-7).



Figure 1: Activity areas of the American Board and the place of Turkey (The American Board in the Near East, ARIT (American Research Institute in Turkey) Archives)

The target population of ABCFM's activities of mission was generally towards non-muslim minorities lived in the Ottoman Empire. It is known that the large number of Armenian and Greek people lived in Kayseri, and in its immediate surroundings in the 19th Century (Cömert, 2010, pp. 26-27). That's why Kayseri was one of the important stations established in Anatolia by ABCFM. This situation made Kayseri significant for the missionaries, and they, not only maintained religious activities but also maintained their activities on education, and health for long years. Hence, these activities provided an opportunity for spreading Protestantism in convenience. In the early periods, the American Board rented buildings for their activities in the central station of Kayseri, and in the affiliated outstations. As the number of members of the congregation and amount of donations increased, churches, schools, missionary residences were built by the American Board. In the scope of this study, buildings constructed or used by ABCFM in the center of Kayseri in 19th century, and partly in the early 20th century have been traced. With the help of knowledge obtained from archive scanning, location of these buildings have been spotted, and whether they have reached to this day or ruined or vanished, and their present states have been examined.¹ As a result of the research it has been seen that buildings constructed in the 19th Century in Kayseri Station, and in its affiliated surroundings, only the ones in outstations, like Talas and Zincidere, have been reached until today. Whereas, the ones built in Kayseri Central Station only the traces of the ruins have been observed. Unfortunately, the locations of most of them are not known. Since the subject is extensive, and the documents in the archives are so rich buildings in Talas, under Kayseri administration, and buildings in Zincidere, a village of Talas have been excluded from this study. Although small number of Protestant buildings have remained in Anatolia, and the utilization value of them could not be realized bringing these buildings into scientific literature is of great importance for preserving buildings by correct principles, and conveying them to the future generations in their original condition.

¹ In the archives scanning the Ottoman Archieve of the Prime Ministry; Yıldız Classification (Yıldız Arşivi Hususî Maruzat Evrakı, Yıldız Esas Evrakı, Yıldız Perakende Evrakı Arzuhal ve Jurnaller, Yıldız Perakende Evrâkı Mabeyn Başkitâbeti), Other Classifications (Bâbiâlî Evrak Odası Sadaret Mektubi Kalemi, Mühimme Kalemi); Archieve of the Papers of the American Board of Comissioners for Foreign Missions (PABCFM), Archieve of the Erciyes University KAYTAM (Historical Research Centre of Kayseri and Neighbourhood), Archieve of the American Board and SEV Vakfı (Health and Education Foundation), Erciyes University Kadir Has Library, The German Archaeological Institute Library, Istanbul Technical University Libraries, Harvard Library "Special Collections", online databases, special archives.

Methodology

This study consists of three main steps. The first step is to scan the literature and the related archives; the second one is to survey the localized existing buildings, and to examine the present states of them. And finally, it is to synthesize, interpret and comment on obtained data.

In the literature, it has been seen that all the publishing issued about American Board's movements, and its missionary movements in Kayseri focus only on the content of the movements but for the buildings used for these activities. Even which buildings were used for these activities, and where their locations were, have neither been pointed out nor known. The only buildings known that the Protestants used, and mentioned in the publishing on missionary movement are the Protestant Church in Zincidere, and the American College in Talas. There is no study on examinations of the buildings used in Kayseri Station. Only Arşark Alboyacıyan included some information about Kayseri Protestant Church in his book, in which he told Armenian history and culture, published in Armenian in 1932. However, there is some contradictory information in it. Since necessary data could not be collected, in the scope of archive scanning, more research was primarily done in the library of Harvard University in 2015. Correspondence between Headquarters of ABCFM and the missionaries, reports, yearbooks of schools, and general reports of the doctors worked in American Hospitals have been examined. In the form of being scanned and copied to film reels, letters, annual reports that most of them are manuscripts, sent to America by the missionaries worked in the Central Stations and affiliated outstations have been kept in archives of the Harvard University Library together with the minutes of the annual meetings of ABCFM held in Boston². Generally, in these correspondences, number of students, events that missionaries and the congregation experienced, expenses, names of the missionaries and teachers on duty, and excursions have been noted down. Because most documents are manuscripts (Figure 2) copied in microfilms it has taken long time and been tough to decode them.

² The PABCFM documents used in this study were obtained by the archives research conducted at the Harvard University library in 2015 within the scope of the project supported by the Scientific Research Projects Unit of Erciyes University (No:4440).

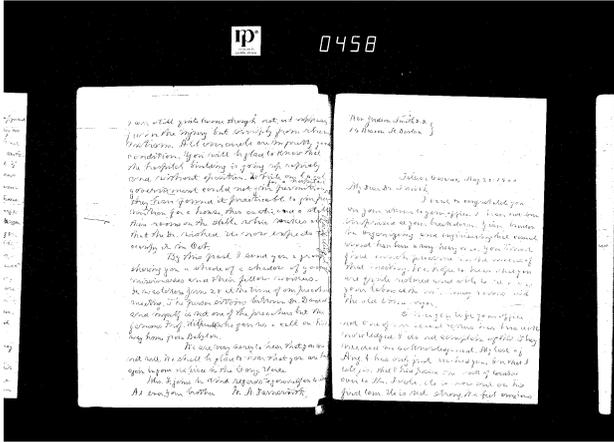


Figure 2: A Sample Correspondence of PABCFM (Papers of the American Board of Commissioners for Foreign Missions, R.620, N.458)

Another stage of scanning of the archives have been done in Ottoman Archives through Prime Ministry Archives in Ankara. In these archives all the documents including correspondence with American Board have been examined. Estate' deeds, land registration in Kayseri have been examined, as well. By examining the documents in the private archive of researcher Hüseyin Cömert, who has been studying on Kayseri's land registration; and documents of Kayseri Historical Research Centre (KAYTAM); the translation of registered deeds and taxes done by History Departments of the Universities, knowledge of the estates belong to the American Board has been obtained.

Another important knowledge resource of buildings used by the American Board is the diary of Wilson Amos Farnsworth, who was on duty in Kayseri as a missionary between the years 1853-1903. These notes have been translated by Professor Dr. Mehmet Şahin. Additionally, oral interviewing Dr. Md, Warren Winkler, who worked in Talas American Hospital between the years 1957-1967, is another resource of knowledge of American Board operations. Extra knowledge of the states and the location of the buildings in Kayseri in the beginning of the 20th century was received from Dr. Winkler, who was working in Istanbul American Hospital in 2013. Along with this knowledge received from Dr. Winkler old photos taken in the late 19th century and the beginning of the 20th century in Kayseri have been examined and among these photos Protestant buildings have been searched.

At the end of nearly 5 years of researching stage this article has been written by synthesizing all the documents and the resources of publishing related to operations of missionary operations. Little knowledge between the lines about location, construction, and usage of these buildings has been synthesized for this study.

IN THE 19TH CENTURY THE AMERICAN BOARD ORGANISATION AND ITS OPERATIONS IN THE OTTOMAN EMPIRE

Due to its strategic location, multi-cultured structure and its sociological profile that consisted of various ethnical population, the Ottoman Empire was the focus of interest of the missionaries of Christianity in each era. The most important interference of the missionaries, who were operating in dissemination of belief of their congregation they belonged to, was in educational area. The first steps were taken by Italian and French. By obtaining some commercial and judicial rights thanks to the Treaty of Capitulation agreed by Ottoman Sultan Kanuni Suleyman in 1535 France came into prominence. The first foreign school, Galata Saint Benoit High School was opened up by Catholic Jesuits in 1583. In following years, foundation of the schools of Great Britain, Austria, Russia, Italy, Germany, America and various congregations were rapidly widespread all through the country (Polvan, 1952, p. 147).

The first actions for founding of the Protestant Churches in the frame of dissemination of Evangelicalism were launched by the Britons. From the beginning of the 17th century the Protestant Churches were founded by them in Izmir (MacLean, 2006, pp. 64-80); by the Swedish in Istanbul; by the German in East Anatolia (Theolin, 2001, pp. 150-152). However, in this period, except big cities like Izmir, Istanbul enough number of protestant population for churches could not be formed in Anatolian cities so church buildings could not be built instead consulate quarters or houses were used for worship (Grabill, 1971, p. 34).

One of the most affective institution for dissemination of evangelicalism in the other cities of Anatolia was the American Board. The missionaries of the Board came to Anatolian land to find a group of people having the potential of adopting protestanism and to disseminate their belief to further areas in the Ottoman Empire territory in 1820. The first thing they did, was to survey and examine religious, political, economic situation, education policies (Grabill, 1971, p. 34). The missionaries tried to learn public's language, religion, customs and usage first. After that, they immediately opened schools, printed and delivered Bibles, religious books, and school books written in the local peoples' mother tongues (Kocabaşoğlu, 2000a, p.23). At first, the missionaries were faced with the biggest opposition from the Catholic population. Whereas the Muslims were in different to these operations due to faithfulness to their religious beliefs. Consequently, convincing that it was difficult to push the Muslim population, and even dangerous as these operations would lead to the Empire's interference with the situation, as a result, the missionaries gave up going on their operations and leading to the non-muslim populations.

They focused on their activities on non-muslim population. At that time, Istanbul was accommodating the most population density of Jewish and Greek people of the world. The missionaries, understanding that it was difficult to act on those ethnic groups in Istanbul, decided to lead their bearings to the populations of Armenian, Greek, Syrian orthodox, Nestorian (Assyrian), Alawite in Anatolia (Kieser, 2005, p. 92; Basmacıyan, 2005, p. 92). Due to intensive oppositional reaction³ from the Greek Orthodox population in Anatolia, they focused on the Armenians who mainly lived in Anatolia (Dwight, 1854, p. 28). As a matter of fact, it has been seen that in almost all of the stations that the missionaries primarily established in Ottoman geography, important part of the population was composed of Armenian people (Tchilingran, 1996; Şahin, 2018, p. 19).

At the end of these preliminary studies realized during 11 years, with the belief that Anatolia with its multy-cultured structure was an appropriate environment for spreading Evangelicalism, Turkish Mission was founded in 1831, and Istanbul was designated as a center for missionary operations in the Ottoman Empire. Between the years 1831-1858, 24 central stations and numerous outstations affiliated to these centers were founded (PABCFM, R. 617, N. 327). (Figure 3). With the aim of monitoring these stations more closely, and regularly, and categorizing them, a meeting held in Kharpout in the eastern part of Turkey in 1860. In this meeting Turkish Mission was divided into 3 divisions as Western Turkey Mission; Eastern Turkey Mission; and Central Turkey Mission (Figure 4). Division including Edirne, Trabzon, Sivas, Kayseri, Konya and Izmir was decided to be included in the Western Turkey Mission (Strong, 1910, p. 200).

Operations were maintained by limited means in the first years of foundation of Turkey Mission. After that the Ottoman Empire undertook series of reforms to modernize society and declared “Gülhane Hatt-ı Hümayunu: Imperial Edict of Gülhane” in 1839, and enacted new laws. Upon coming into force of these new laws operations gained acceleration and became easy. These reforms were called as “Tanzimat Fermanı” in Turkish language. Important improvements especially in the lives of non-muslim population were realized by the help of “Tanzimat Fermanı” which was the result of ongoing studies on social improvement since the beginning of 18th century (İnalçık & Seyitdanlıoğlu, 2011). After the declaration of “Tanzimat Edict” (Tanzimat Fermanı) the Ottoman Empire permitted to increase the number of churches and the schools for non-

³ There is an intense connection between religion and nationality in Anatolian Greeks. The missionaries had a hard time trying to influence the Greeks who believed that they would be alienated from the church by leaving the church and changing the sect. (Augustinos, 1997, p. 199).

muslims, and to convert their sect (church) more easily than before (Ortaylı, 1989, p. 48). This permissive approach led the missionaries to build new buildings and to enlarge them (Karal, 1947, p. 174). New law enacted in 1855 as a follow up step of “Tanzimat Edict” supported these Works, and provided abolition of “jizya” tax (tax paid by non-muslims). Afterwards, “Rescript of Reform” (Islahat Fermanı) was issued in 1856. It specified prominently non-muslim subjects’ welfare, freedom, and security as their rights and privileges in details (Ortaylı, 2000, p. 49).

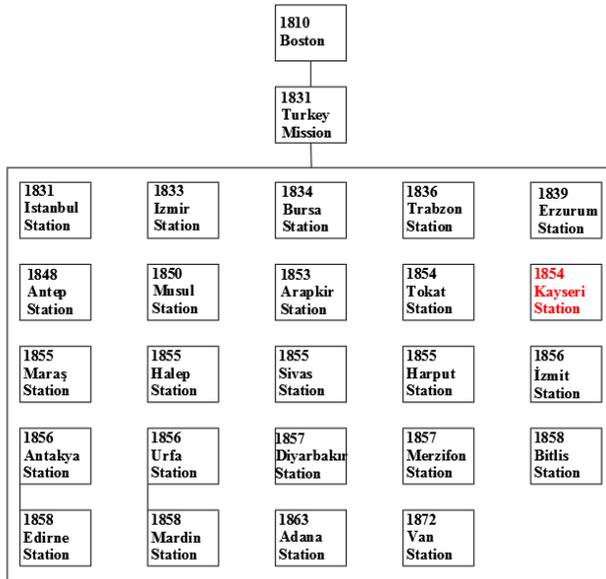


Figure 3: Foundation Chart of Stations by American Board in Turkey (Musul: Mosul, Halep: Aleppo)

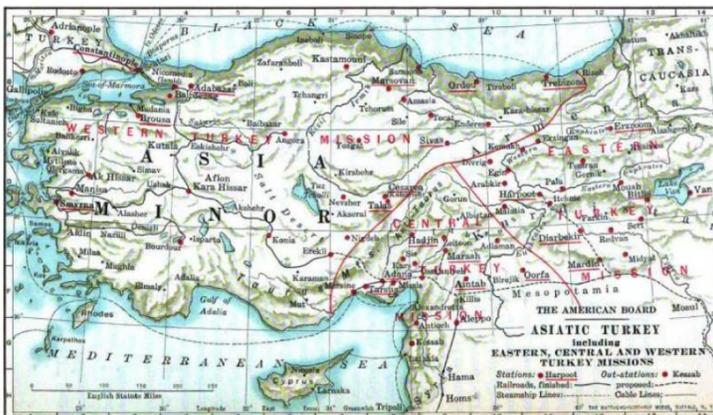


Figure 4: Districts of American Board, Stations and Outstations (Strong, 1910, p. 386)

In the Ph. D. dissertation of E. W. Shelton, the following information about the operations of the American Missionaries in Turkey has been taken place as:

“By 1846, the first Church, the Armenian Evangelical Church, was established in Pera, rapidly followed by three other churches. In 1847, the Protestant missionaries, with the assistance of the British ambassador, succeeded in obtaining initial protection for their converts, and in 1850, with an official firman issued by the Sultan, they obtained millet status for all Protestants, giving them, at last, a form of official status and protection.” (Shelton, 2011, p. 213)

With “Rescript of Reforms” Protestant missionaries’ operations gained acceleration and this affected the Ottoman Empire to recognize officially Armenians’ Protestant church in 1859. These Armenians converted into evangelism by the influence of the Protestant missionaries (Halaçoğlu, 2001, p. 4). Donations and supports of the non-muslim population whose commercial activities and economic powers level increased after the “Rescript of Reforms” (Yerasimos, 2001, p. 55) contributed to the missionaries’ operations for evangelicalism’s propagation.

In this process, the basis of operations of the American Board was religious, but on the other hand they were interested in education, health, orphanages, and publishing. In fact, they prominently dealt with educational issues. First of all, in their educational studies children, young adults and women were targeted and started with primary and Sabbath Schools. These schools were supported with secondary girl’s/ boys’ schools and preparatory schools. In the following years colleges were founded for the students who graduated from secondary schools to continue their higher education. These educational services played significant role on non-muslim peoples’ religious, political, and social changes (Strong, 1910, p. 80; ABCFM, 1931, p. 75; Demir, 2008, p. 1). Social services were supported with health care services, and within this frame hospitals and dispensaries were established to care all people from different social classes without regarding discrimination of ethnical, religious origin. The poor patients were treated free of charge even the doctors and nurses generally went to the villages for treatment. They naturally gained these people’s respect and love. The first American Hospitals were established in Antep, Talas (Kayseri), Mardin, and Van. Later hospitals or clinics were established in Istanbul, Merzifon, Sivas, Harput Erzurum and Diyarbakir (Kocabaşoğlu, 2000, pp. 96-97). Together with American doctors and nurses, local doctors and nurses, especially Armenian ones worked in these hospitals, as well (Strong, 1908, pp. 24-27). With the aim to contact local community more easily the Bible and holly books in the local population’s mother tongue, Armenian, Greek, and

Ottoman Turkish, were distributed. Publications and books' distribution were operated actively in the stations. In Malta, Beirut and in Izmir (Smyrna) printing houses were built and newspapers were printed and transported to all of the stations. In 1853, the Missionary printing House in Izmir was relocated in Istanbul after the British and Foreign Bible Society had opened up a press branch in Istanbul to begin its press activities in 1823. In 1856, American Bible Society that operated in New York started to its services in Istanbul by opening a branch there. In the Bible House built in Istanbul in 1872, a big and modern printing press house for publication with its meeting halls, translation and editing rooms, a big library, a place for selling books, stores for books, in addition to its rooms assigned for different missionary unions (Dwight, 1854; Şahin, 2018, p. 29).

One of the operations providing adoption of Evangelicalism was to target to influence women, young adults, and children. Various clubs and fellowships were established for women and young adults, additionally nursery schools and orphanages were built in several provinces. If the towns had not orphanages poor and orphan children were sent to the orphanages in big cities like Izmir or Bursa (BOA Prime Ministry Ottoman Archives, D. 702, G. 21, 24, 29, 6/1)

In the Ph. D. dissertation of E. W. Shelton, the following information about the young people's movement has been taken place as:

“Student groups, by the end of the century, were joining in the financing of missionary efforts, and in some areas were spearheading new appeals for missions and missionaries. The Young People's Society of the Christian Endeavor (1881) the powerful Student Volunteer Movement (1888), the Young People's Missionary Movement (1902), the Layman's Missionary Movement (1906) rose around the turn of the century, as well as the Young Men's Christian Association and its sister organization, the Young Women's Christian Association. This was a period of high student interest -- and participation – in missionary work.” (Shelton, 2011, pp. 58-59)

The reflection of all these studies, although scales and influence were in various sizes, was observed in all stations. In Kayseri, one of the important stations, with its central location and its dense non-muslim population, the American Board continued its operations between 1854-1967.

THE OPERATIONS OF THE AMERICAN BOARD IN KAYSERI CENTRAL STATION AND THE BUILDINGS IT USED

The Operations and Foundation of Kayseri Station

The pioneer American missionary came to Kayseri was Elnathan Gridley. When he was working in Izmir a teacher from Talas–Endürlük taught him the language and later he invited Gridley to Kayseri in 1827. In his letters Gridley mentioned dense population of Armenian and Greek people lived in Kayseri and Cappadocia (TMH The Missionary Herald, 1828, p. 111). Upon this information sent by Gridley a group of reverends did preparatory work on behalf of evangelicalism between the years 1839-1845 in the region. At the end of these studies the American Board missionaries, W. A. Farnsworth and J. N. Ball came to Kayseri and founded Kayseri Station in 1854 (Stone, 1984, p. 15).

After the foundation of Station travellers, missionaries, and researchers coming to Kayseri wrote their impressions and mentioned operations on Evangelicalism. In the years Turkey Mission was founded, Dwight, who was one of the Pioneer missionaries settled down in Istanbul, travelled to Kayseri in 1861, and wrote a letter telling about the villages major population of which was Armenian, and Greek. He told in his letter that they travelled on horse to magnificent villages like Talas, Endürlük, Zincidere, Reşadiye, Tavlusun, Germir, Gesi, Efkere, Darsiyak. Dwight told that the gardens and buildings of these places were large and in prosperity. Armenian and Greek people were dealing with trade and houses of them were built by ashlar in 3 to 4 storeys. According to Dwight those houses looked like solid-looking baronial residences in old European towns. In his letter it was emphasized that between those villages and the Muslim villages next to them there was a significant difference of culture, prosperity and social class. The wealthy Christians who converted to evangelicalism and lived in those villages donated significantly to the operations of missionaries (Şahin 2018, pp. 53-69).

In 1880, British Lieutenant Bennet, in his report on Kayseri, stated that 600 Armenian converted to Evangelicalism, 160 Armenian converted to Catholicism. In this report, it was stated that after the evangelicalism movement, catholics were decreased in number (Kocabaşoğlu, 1996, p. 1). The engineer Barkley, who travelled to Kayseri in the same year, indicated that Gregorian Armenians despised converted Armenians, even the word “protestant” was used as an insulting term (Barkley, 1891, p. 161). On the contrary to what Barkley said, according to traveler Tozer, who travelled to Kayseri in 1881, there was no problem between Gregorian Armenians and the Protestant Armenians lived in Kayseri, although there were serious sectarian arguments between Catholics and Protestants in Europe during the 19th century. Even Catholic Armenians sent their children to the

Protestant schools. Tozer mentioned that the Missionary Farnsworth helped all people in town without discriminating against religion and sect, and saved lives of many people during famine (Tozer, 1881, p. 110). Still, the traveler, Kont de Cholet who travelled to Kayseri in 1890-1891 stated that one of the richest merchants of the town sent his one son of the three to Armenian, one to Jesuit, the last one to Protestant schools (Eravşar, 2000, p. 213). This situation has shown that American missionaries were accepted generally, and had powerful influence on the people of the town.

The new protestants who were predominantly the Armenians converted, were not all the time in the control of the American Board. Although they converted to evangelicalism, a group of Armenian people refused to be under the auspices of the American Board, and founded their independent Protestant congregation, and gained their liberty. The Armenian group, who separated from the congregation protected by the American Board, was called as “Small Pack”. The group of “Small Pack”, who refused to be donated and paid salary by the American Board, left missionary operations to the Board missionaries, and they placed emphasis on the educational affairs. To continue their influence on this small group, who usually used their houses as their church and school, the American Board founded Talas American College that was designed as wide ranging complex for Kayseri in 1889. Thus The American Board got this small group in their control again (Alboyacıyan, 1937, pp. 1046-1059)⁴.

In 1907, upon the decree called “Statute on General Education” (Maarif Nizamnamesi) a resolution related to close the schools with no official permit was issued and it caused the missionary operations carried out to interrupt for long years. Thus, unlicensed schools were closed, and the danger of narrowing influence area of the missionaries occurred. This situation in the educational field on that the missionaries put great emphasis turned out to be an issue that the American Ambassador interfered in. With the permission got by the American Embassy from the government, along with providing continuation of the services of schools in Kayseri and Talas, garden schools for children, hospital, accommodations for the missionaries, and pharmacy were provided to continue their services, as well (Sevinç, 2002, p. 209). The American Board suspended its operations for a while due to the Ottoman Empire’s taking part in the World War I between the years 1914-1918. After the war the operations started again in some of the stations. In a map drawn in 1930, it has been seen that Kayseri and Talas Stations were maintaining their operations prominently in those years (Figure 5).

The American Board’s operations in Kayseri have been taken under 5 main titles as religious operations, educational operations, health

⁴ The Armenian text was translated by Kevork Taşkıran during the personal interview

operations, publication/press operations, and social operations. In this way, to understand the relationship with the buildings used, has been aimed in this study.



Figure 5: A Map of American Board's Operations (ARIT American Research Institute in Turkey Archives, 11160)

Religious Operations

Gregorian Armenians were the target audience in non-muslim population for the American Board's operations for evangelicalism. Along with the operations in non-muslim quarters in the central station, outstations were also founded in neighboring locations like Develi, Talas, Muncusun where Armenian population was dense. In the map (Figure 6) designed according to the distribution of population in the center of Kayseri, in the 19th century; locations where predominantly muslim population lived; locations where predominantly non-muslim population lived; and locations where muslims and non-muslims lived in common with have been indicated. Nonetheless, society in these locations was not separated with sharp borders, because different ethnical groups lived together in many districts of the town. In this map designed with the aim for specifying missionary operations' areas, a drawing done by Jean S. Euthychides in 1882, and updated by O. Eravşar (Eravşar, 2000, p. 343) was used as a base, and approximate borders of the locations aforementioned in the archives⁵ were marked. When these borders were

⁵ According to the Kayseri Curriculum Book dated 1831-1860 and the Jizye Book dated 1843, the Armenian neighborhoods in the city center of Kayseri: Batman, Bektaş, Dadır, Emir Sultan, Fırncı, Hacı Mansur, Harput, Hasan Fakih, Hisayünlü, Karabet, Karakiçi, Karakürkçü, Konaklar, Köyyıkan, Mürekkebcı, Oduncu, Puşegan, Sayacı, Süleyman, Tavukçu, Tus, Tutak ve Varsak; Rum mahalleleri Ahi İsa, Sasık ve Şarkıyan; Ermeni ve

specified a study on the districts and quarters existed in different periods of Kayseri done by K. Demir and S. Çabuk was utilized (Demir & Çabuk, 2012, pp. 132-140). (Figure 6)

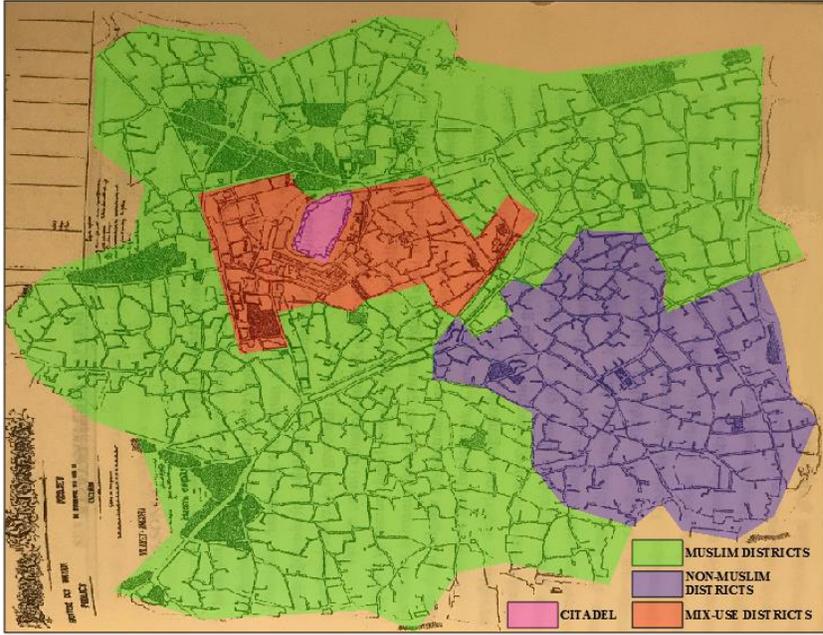


Figure 6: Districts, Quarters in Kayseri, in The 19th Century

In the neighbouring areas of the churches and houses for the missionaries built in these quarters, Sabbath schools for adults, primary schools for children were opened with the aim at reading the Bible. In time, the need for ecclesiastics, and teachers increased because neighbouring area of the central station widened, number of outstations increased, and the services were thought to be carried out in the outstations. This situation created the need for quality increase, and system extension (Demir, 2008, p. 19). Teachers also carried out missionary operations, thus religious operations and educational operations became parts of the same system which complete and support each other.

For the missionaries, the number of the people, who were converted to evangelicalism, was always important, and the number of women, men and children was regularly reported to the central station. In his diaries, Farnsworth indicated that, in the first phase, there was a small congregation converted to evangelicalism, and there was a small Sabbath School served

Rumların karma olarak yerleştiği mahalleler Eslim Paşa, Genlik, Gürcü, Hacı Kasım, Kiçikapu, Mermerli, Rumiyan, Selaldı, Sınkıcı, Sisliyan ve Sultan. (Yörük, 2013, pp. 439-466)

to this congregation. While the Protestant congregation was composed of 36 people in 1854, it increased to 81 people in 1855. When it was 1858, in the reports sent to Boston Headquarters it was reported that one sermon abode, 2 schools, and 1 church existed in the center of Kayseri, and it was very promising result in four years of time (Annual Reports, 1858). In the reports of 1877, it was stated that there were 415 people in their congregation. Belonged to this congregation, there were 27 sermon abodes, 33 schools with 1922 students. It was emphasized that the result after 23 years was promising after an eight-person group formed in 1854. A church was built for this crowded congregation in 1876, and it was enlarged and renovated in 1881. Thus, this church turned out to be more available to serve the congregation increased in number at ease, than before. While religious operations were continuing in the mission houses, a chapel was built in 1900 with the support of the Little Bible Society (Şahin, 2018, pp. 109-123, 142, 154, 205, 241). In 1913 there were 19 Protestant Churches in total in Kayseri, and in its outstations (Alan, 2003, p. 53).

Educational Operations

Sabbath Schools founded with the aim of supporting religious operations, and the most common ones among the educational institutions, appeared for the first time in the documents of 1861 as the earliest. Nonetheless, when the general function has been taken into account, it has been considered that these Sabbath Schools existed from the beginning of the missionary operations. In the documents of PABCFM it was reported that 3 Sabbath Schools existed in 1861, and it increased to 37 in 1892 (Demir, 2008, p. 142).

Schools placed emphasis, and used commonly for children's education and their bringing up as believers of evangelicalism were the primary schools. Nursery schools were used for preparation for the primary schools. In Kayseri, the first nursery school opened in 1891 with the supports and contribution of Lend a Society. Little children were first taken to the nursery schools, later they placed in four-year primary schools. Although primary schools were for only girls or for boys, co-education was applied in some districts, as well. Called as "Common School" there was only one in 1854, but 48 were in 1889 (Demir, 2008, pp. 139-142).

As the number of people in the congregation increased, in addition to the primary schools which were founded in each quarter, secondary schools were founded, as well. The first secondary school in Kayseri was Kayseri Boys' School which was registered officially. Although the starting date was not exactly indicated the Girls' School existed before 1862 according to the statements during its opening (Şahin, 2018, pp. 109-123).

When the yearbooks of 1899-1900 were examined it has been spotted that there were three schools on the high school level in the center of Kayseri. These were “Argeos Boys’ High School”, “Girls’ High School” (without a name), and “The Bible Preacher High School”. In this document, it was indicated that foundation year of “Argeos Boys’ High School” official permit of which was given on behalf of Kerope Efendi was in 1856-1857, of “Girls’ High School” was in 1871-1872, foundation year of “The Bible Preacher High School” official permit of which was given on behalf of Avadis Efendi was in 1869-1870 (Kocabaşoğlu & Uluğtekin, 1998, p. 221). However, it was stated in the documents of ABCFM that “Argeos Boys’ High School” was founded with the help of Lend a Society in 1883. According to the diaries of Farnsworth, the schools in the center of Kayseri were on the level of primary and secondary schools until 1873, on the other hand, “The Girls’ Semin” founded in 1873, and started to educate students on the level of high school (Şahin, 2018, p. 223). For this reason, it has been assumed that opening dates of these schools registered in the Ottoman archives were the official dates. It has been thought that students could not present all the time and these schools were served as secondary schools before these dates.

Health Operations

Hospitals founded in Sivas, Kayseri, Merzifon, Istanbul and Konya took place in the American Board’s West Turkey Mission District. In this district, medical missionary operations pioneered by Dr. Henry S. West in Sivas, by Dr. Moses A. Parmelee in Trabzon, and by Dr. William Dodd in Kayseri. Nonetheless, in the district of West Turkey Mission, the first mission hospital started its service in Kayseri, in 1887 (Riggs, 1935, p. 33). At first, travelling doctors serviced, later in 1892, dispensary building was put into service in Talas, and health services were predominantly moved to Talas. Despite the fact that health service was given actively in Talas dating from 1892, the first dispensary in the center of Kayseri was opened in 1903. This dispensary servicing between the years 1903-1910 closed in 1907-1908, but later it was put into service again (Demir, 2008, pp. 123-124).

Publication Operations

In Kayseri, within the publication operations, a weekly newspaper “Avedaper” (The Messenger) was printed both in Armenian, and in Turkish but printed by Armenian letters, and additionally a magazine “Illustrated Monthly Child’s Paper” was published, as well. Two colporteurs delivered these publishings, and The Bible in local languages, and religious books riding on donkeys or horses (Şahin, 2018, pp. 53-63). Ioannis Ioannidis stated that those operations annoyed non-muslim population, and received reaction from ecclesiastics of different sects. He also added that the Protestants were not only in the center of Kayseri but

also in the neighbouring villages, Cappadocia, and in almost all of the districts of Anatolia. The Protestants were influencing especially uneducated orthodox people. He suggested that people be warned against the missionaries with the sermons in churches, with delivering the books published in Turkish. He aimed at making people conscious of the danger (Ionnidis, 1896, pp. 41-42; Güngör Açıkgöz, 2007, p. 19). This situation has shown that the Greek people were keeping their distance to the missionaries more than Armenian people in Kayseri.

Social Operations

In 1869, various courses for women in the neighboring areas were conducted until 1882, but apart from the exceptions they could not result in success, and were ended (PABCFM, R.582, N. 676, 677, R. 596, N. 705, 706, R. 628, N. 210). In 1882, some young people from Kayseri congregation participated in “Young Men’s Christian Association”, on the other hand some young women participated in “Lend a Hand Society”, and a charity, name of which could not be specified, was founded. In 1892, “The Little Bible Society”, in 1898, and “The Home Missionary Society” were added to the above mentioned societies to collect donations. These societies organized campaigns for donations both abroad and in domestic areas, if support needed they contributed financially to the construction of the buildings (Şahin, 2018, p. 241).

BUILDINGS USED IN KAYSERI CENTRAL STATION

When all the missionary operations are examined the following classification can be made for properties built and used: buildings for worship (churches, chapels, sabbath schools); buildings for education (nursery schools, primary schools, girls’ and boys’ colleges); buildings for medical service (hospitals and dispensaries); buildings for accommodations (houses of missionaries, student dormitories); buildings for social activities (youth clubs); and buildings for collective use (house+church, church+school, etc.). Nevertheless, there have been locational uncertainty of these buildings. The land and tax registers of the 19th century have been kept in the archives of the state, or universities. These registers are in Ottoman Turkish. Part of these documents in the archives have been translated into today’s Turkish and been published, however, majority of the recordings related to the period of existence of the American Board in the Ottoman Empire unfortunately have not been decoded, yet. For this reason, it has been getting difficult to spot the exact locations of these buildings. The other sources are the reports and correspondences of the American Board in which names of the quarters or districts have been given insufficiently. The ambiguous statements like “the most beautiful place of the town”, “near downtown”, “district with

scenic landscapes” have been used. Therefore, locations of many buildings have been estimated by the old photos and maps.

Collectively Used Mission Houses

In 1854, after a few months from the foundation of Kayseri Station, Farnsworth sent reports to the headquarters, and he stated that evangelicalism was drawing much interest among Armenians in the district. Although there were two Armenian Churches in Kayseri, Armenians tended to assign one of them to the protestants’ service (Şahin, 2018, p. 46). However, this wish was not realized, and the Protestants sustained their services in the rentals in Kayseri. From correspondence about number of the members of congregation, number of students for education, and property usage, it has been understood that houses of the missionaries were usually collectively used as residences, Sabbath Schools, churches and schools. Even, it has been understood that missionaries took pride in luxury of these properties which were serving as a model for Kayseri.

When the missionaries were mentioning life styles of Kayseri and its neighboring, and the houses people dwelled, they stated that there were barns for animals in the basement, and dim living rooms with small windows in the upper storeys. They also emphasized that they played a part in changing the design of buildings’ windows into higher, and bigger ones for spacious and well-lighted rooms, and changing soil flooring into wooden ones (Kantarıcı, 2002, pp. 48-56).

Reverend O. J. Barrows, who worked in Kayseri, in 1873, mentioned that the mission house, which was around the shopping center (most possibly Grand Bazaar), (Figure 7) and bought by Mr. Farnsworth in 1870, attracted everyone’s attention owing to its being luxury and all purpose, practical house. Barrows, who emphasized that most of the rooms in houses in Kayseri were dark, humid, and impractical, stated that each room of the mission house was well-lighted, spacious, and airy, on the contrary. In 1872, Farnsworth built an additional storey up on the house for a missionary family’s accommodation, and refurbished the basement as a training room/classroom (TMH, 1873, pp. 304-306). It has been understood by the expression of “bought” that an existing Kayseri house was used and turned to be available for the usage of congregation and missionaries by renovation and refurbishment.

Boys’ school was situated next to Farnsworth House, and it was located in Emir Sultan Mahallesi/ Quarter/District in Kiçi Kapı (Yılmaz,

2016, p. 75). This district around Grand Bazaar (Figure 7)⁶ was the quarter in which Farnsworth’s mission house took place. In “The Missionary Herald” newspaper issued in 1873 there was a photo of Farnsworth’s House, and a diagram referring to this photo (Figure 8).

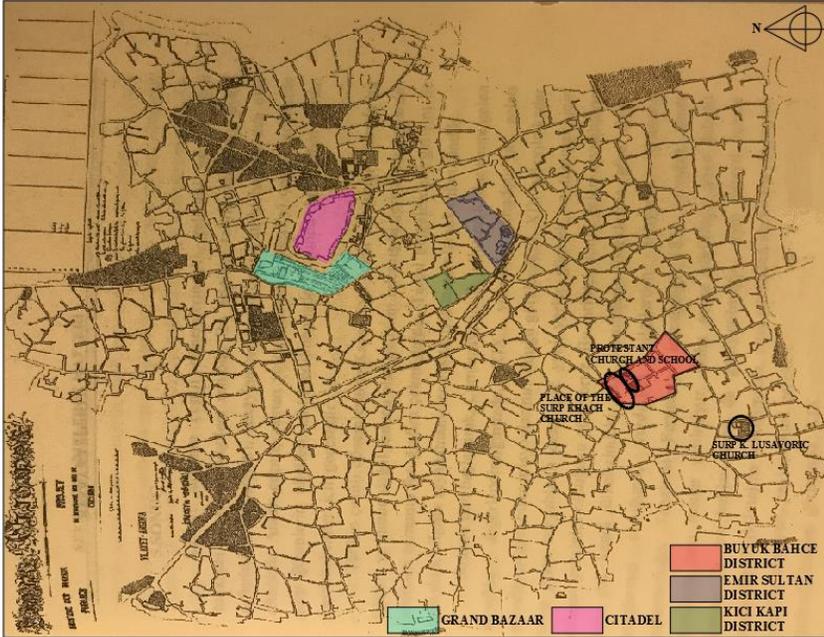


Figure 7: Buildings and Districts/Quarters Abovementioned

When this diagram has been examined it has been seen that this house was constructed in conformity with the traditional architectural style of Kayseri, and constructed by masonry construction technique and by the local material “ashlar”. The expression of “upstairs was built upon the house” in the correspondence in 1872 put out that Farnsworth property, as all of the building or part of it, was one-storey house when it was bought. When the dwelling architecture of that period has been examined it has been known that one-storey buildings were rather few in number, whereas, majority of the dwellings were two-or-three-storey houses in this district which was one of the most important settlement area. Again, height of the storey was not squatty, but was higher, and more spacious, and spans of windows were wider and higher than the one as shown in the diagram because they were living areas. Due to beam span’s being narrow in the ground floor, and being in the L shape it has indicated that the house’s one part was one-storey, and the other part was two-storey when it was bought.

⁶ In this map designed with the aim for specifying missionary operations’ areas, a drawing done by Jean S. Euthychides in 1882, and updated by O. Eravşar (Eravşar, 2000, p. 343) was used as a base.

Second floor was constructed on top of one-storey part. It is understood that, due to its being constantly stated that mission houses were larger and more spacious than the houses in the district, small rooms were combined with each other to enlarge the space, proportion of the windows was widened by renovation. Fliers providing to go upstairs, and extending along the face wall, and windbreak with gable/saddle roof and with wooden compartment at the end of the stairs were an entrance design which was not encountered in Kayseri houses in that period. It has been understood that this entrance was added during renovation. Still, the number of the chimneys both placed on face roof, and on roof of the rooms have indicated that there was advanced heating system in the house, that was why there were many chimneys.

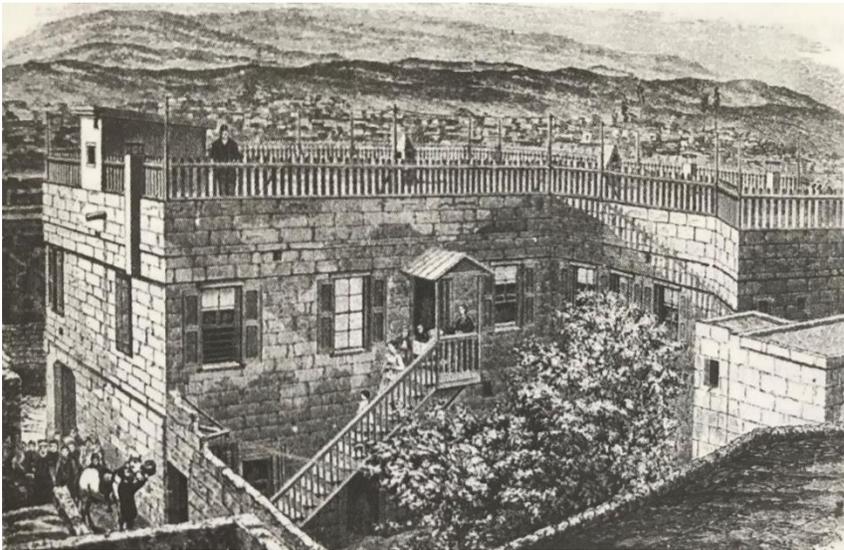


Figure 8: The Mission House in Kayseri (Şahin, 2018, TMH, 1873, p. 305)

H. Tozer, who visited Kayseri in 1881, sojourned at the mission house of Pastor Kerope Yakobian, and described the house as follows (Tozer, 1881, pp. 104-105).

“.....we found with him a native Armenian Protestant pastor, M. Kerope Yakobian,..... This gentleman at once offered to entertain us, and when we reached his house, which is at the further end of the city towards the south-west, in the Armenian quarter, we found it to be a fine stone-built mansion with spacious and airy rooms. Hard by, in the garden, is a large Presbyterian church, which was built by the subscriptions of friends and sympathisers in Scotland. We were introduced to his wife, but she did not appear again until the time of our departure. Female seclusion is practised by

the Christians in this country almost as strictly as by the Mahometans; indeed, except when we visited American families, throughout our journey, the female sex may be said not to have existed for us at all. The views from this house were very extensive. From the front, where a large central hall on the first floor opened on to a balcony, the eye ranged over the roofs of the city, with minarets and tall poplar trees at intervals; but in the opposite direction Argæus and his outlitters, stretching in a long line close at hand from east to west, formed a magnificent spectacle.”

As for Barkley, who stayed in Kayseri and Talas for a while, he described the mission house where he stayed, as follows:

“After supper we clambered up a ladder on to the flat roof of the house, which, being a two-storied one and standing on a piece of raised ground, gave us an extensive view of the town, and it was hard to believe we were in an inhabited place. The houses were all flat-roofed, and to us looked as if the real roof had been destroyed or carried away. The walls were composed of rough stones set in mud, but not one could be seen that had not crumbling broken places in it. The doors and window-frames were all unpainted, and most of them broken and decayed.” (Barkley, 1891, p. 147).

In the last century, a serious demolition was performed in the center of Kayseri, only some monumental buildings were saved. Whereas, many properties, which were in quality of cultural heritage, were destroyed. These buildings, as well, which were the first properties of the protestants in Kayseri, unfortunately could not reach to exist today.

Churches, Chapels and Outhouses

While function of worship was sustaining in the collectively used buildings until 1857, a new land was bought, and a masonry school building, and a chapel were constructed on this new land (Şahin, 2018, pp. 53-63). There is no information about the location and size of these buildings, today. Until 1876 this chapel was used as a worship building, whereas, the missionary properties in diverse districts were maintained collectively shared usage for various activities.

The construction of the protestant church, one of the most important protestant properties in Kayseri station, was started in 1876. In the archive resources, there have been two different pieces of information about the congregation of this church. According to the American Board sources, a substantial amount of money was sent to the congregation of Kayseri from Scotland, and upon this donation abovementioned land in the most

charming district of the town was bought and the construction of the church started (PABCFM, R. 589, N. 35). However, Alboyacıyan claimed that the Americans continued their services at home churches, but this church was constructed by the “Small Pack”, an Armenian group, who separated from American Board, and established their small independent congregation. It has been reported that this church was small, but attentively built, sweet, and harmoniously constructed building where there was an elegant residence for the pastor’s accommodation in the courtyard, and there was a meeting hall for social activities (Alboyacıyan, 1937, p. 1052)⁷.

In the documents of ABCFM, it has been indicated that this building was for 800 persons, and in the corresponding about it the information related to its construction has pointed out that the church was erected on a foundation of 18 feet (5,48 m.) of depth, and 72,5x47 feet (22x14,3m.) of size. It has been specified that the church was featuring a dome on a drum and was in late Byzantine style, built by dark grey ashlars; the walls were painted white; 6 piers were sculpted by monolithic stones of 4,5 m. height; then, these pillars were connected with fine arches; its roof was covered by cut stone; to rest the dome on, an intervening circular wall between the pendentive and the dome (tholobate: the upright part of a building on which a dome is raised) was built in which the clerestory windows for enlightenment were pierced in this circular wall; a dome pedestal (a dome on a drum) was 17 m. of height; the windows were ornamented by pleasant frescoes and were pierced in the walls, as well. It has been pointed out that this building was superior to the other buildings in terms of stylishness and proportion as an edifice (PABCFM, R. 589, N. 35, 44). Construction of this church, with a residence for the pastor, and a school for girls, was completed in 1877, and was the first church permitted officially as a church by the Sultan’s rescript/firman. However, any illustration or photograph of this church has not been taken place in the documents. On the other hand, in the letters written in 1881, it was stated that more magnificent building as a church was constructed in place of above mentioned one, and one of the schools in Kayseri was converted into a church (Şahin, 2018, pp. 109-123, 142). No other knowledge about the reason for the church’s rebuilding and becoming more magnificent than before has been found. Thinking on this matter, it has been assumed that there were 267 households and about 1000 people, registered in the Ottoman official documents in 1881 (Kocabaşoğlu & Uluğtekin, 1998, pp. 48, 65), the church was in need of being enlarged for the increased congregation.

There has been no distinct knowledge in the literature about the location of the Protestant church. To specify the location of the church and the current state of it, different sources have been scanned, and by

⁷ The Armenian text was translated by İlmon Hançer during the personal interview

combining obtained knowledge together with the exploration in the mentioned districts, an evaluation has been made.

When land, and tax registrations in the tax registration book, no. 182 dated 1880s have been studied it has been seen that a Protestant church in the Büyükbahçe District, in Büyükçeşme Street (or Söğütlüçeşme Street), and a church in a house (collectively used property) were located in a diverse district of the town (Güngör Açıkgöz, 2007, p. 141). The building registered as a church in a house for collective usage, most probably was the Farnsworth Mission House in the District of Emir Sultan. In addition to these buildings a chapel was built in Kayseri, in 1900 (Şahin, 2018, p. 141). Nonetheless, there have been no knowledge about the location of this chapel, as well.

The housing lot where the church stood in the District of Büyükbahçe (Bahçebaşı or Büyükbahçebaşı according to some resources) has been located by the help of knowledge obtained from different resources. Although there have been some dilapidated historical buildings and ruins in this housing lot, most of the district have been tumbled down and in location of some of them new buildings have been constructed. (Figure 9)

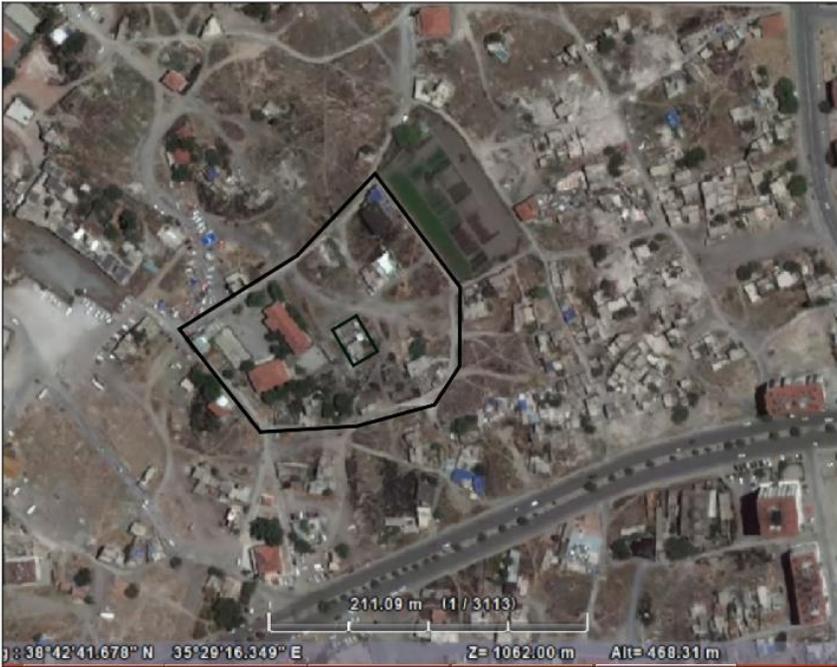


Figure 9: Today's State of District Büyükbahçe Where The Church Existed, And The Location Of The Ruin Assumed As The Church's Additional Building (URL 1).

The research done on the history of Büyükbağçe District has shown that this small district was an important Armenian site. Alboyacıyan described this site as “one of the charming and clean districts” (Alboyacıyan, 1937, p. 1040)⁸. This district was a part of the town located in the South-West of Kayseri by 8-10 well off Armenian families who established a kind of cooperative society to create housing site there. The district was formed in checkerboard network of intersecting streets by 90° angle as the basic layout. Its layout was planned using standards ahead of times with a vegetable garden of about one-hectare size on the South side, a fountain inside the district, churches and schools. In the corner of intersecting streets covered with cobblestones, scuppers for rain waters as a drainage system were built, and the houses were located in the similar rectangular building lands in size of about 400-500 m². (İmamoğlu, 1992, pp. 157) The Surp Khaç Catholic Armenian Church, The Surp Karasun Manug Vorpanots, which was a Monastery (convent), and an important place for pilgrimage, Aramyan College, an important school for Armenians, which was converted to Gendarme (Military Police) School in the following years, were located in this quarter, as well (Kevorkian & Paboudjian, 2012, pp. 222-223). The location of Büyükbağçe District has been spotted by the help of some buildings accepted as reference points. In the photos, a big church has drawn the attention in the district that mostly has been a ruined quarter today. The descriptions taken place in the documents have pointed out that this church was The Surp Khaç Church. Alboyacıyan described this church as a modest and miniature image of the San Pietro Church in the Vatican. According to this description, the church designed as in the shape of cross was constructed with a wide in diameter, and arched dome on top rested on four colossal and strong arches, and over it raised a small dome with columns for finishing coat application as if it was a crown. There were three up galleries, one of which was allocated for women.

The height of the sanctuary was 60 meters from the ground to the peak of the dome, and 60 meters long and 40 meters wide from the narthex to abscissas. There were two pastoforions next to the abscissas which were diaconicon and prothesis (Alboyacıyan, 1937, p. 1042)⁹. This measurement and descriptions have been in accordance with the church in the photos

When these photos have been examined another small church has been seen near the Surp Khaç Church (Figure 10). The photo that Alboyacıyan put in his book as the photo of the Protestant Church (Figure 11) has been spitting image of this small church. For this reason, the church

⁸ The Armenian text was translated by İlmon Hançer during the personal interview.

⁹ The Armenian text was translated by İlmon Hançer during the personal interview.

seen near the Surp Khaç Church in the photo has been specified as the Protestant church.

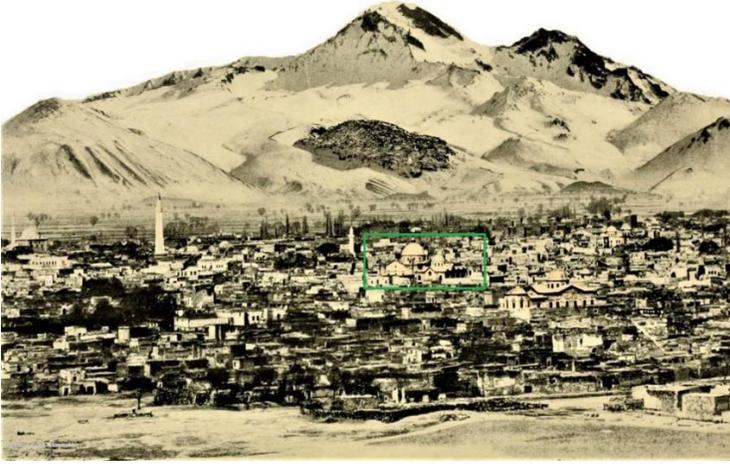


Figure 10: The Photo Taken from The Roof of the Surp K. Lusavoriç Church Showing the Place of the Surp Khaç Church and Protestant Church in Büyükbahçe District in The Early 20th Century (Kevorkian & Paboudjian, 2012, p. 222)



Figure 11: The Photo of the Protestant Church of Kayseri (Alboyacıyan, 1937, p. 1051)

In the map drawn by Jean S. Euthycides in 1882, and the first map of Kayseri, the significant relics of Kayseri were marked (Figure 12). In this map, there has been a parcel of land on which there have been various buildings marked in Büyükbahçe District. In Büyükbahçe District, the locations of the traditional buildings of different periods, have been tried to be specified referring to the study done by K. Demir and S. Çabuk who

have taken Euthycides' map as a basis and depended on the cadastral location diagrams between the years 1945-1954. In this study, it has been defined that building of No: 198 was the Protestant Church, and building of No: 199 was the Protestant School among the group of housing on the parcel of land that Euthycides marked in 1882 (Figure 13). Since the Surp Khaç Church did not exist in 1882, the corner housing lot where this church was constructed in 1889 (Kevorkian & Paboudjian, 2012, pp. 222), has been vacant.

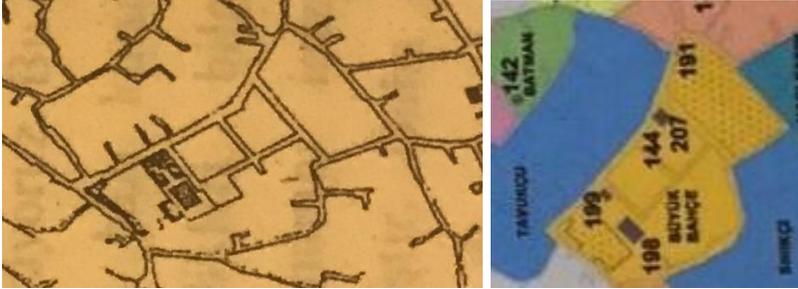


Figure 12: Part of Euthycides' Map showing Büyükbahçe District (1882) (Eravşar, 2000, 343), Figure 13: Buildings identified in the Büyükbahçe District in the study of Demir & Çabuk (Demir & Çabuk, 2013, pp. 138-139)

In a map prepared by V. İmamoğlu, who has studied "Traditional Houses in Kayseri", the location of the Church has been confirmed, as well (Figure 14). In this study of İmamoğlu, the information about the buildings, in Büyükbahçe District, No: 16, and No: 11 has been given as follows: (İmamoğlu, 1998, p. 158)

"Building No:16": Church (in 1950s dom and the walls were about to demolish)

"Building No: 11": Small Church (in 1950s it was being used as a weaving workshop)

"Building No:12": House of Kirkor"

In his memoirs, İmamoğlu mentions that a church with domes was found in the garden of İstiklal Primary School in 1950s. The entrance door of this church was opposite the back facade of the school. The main door in the middle of the facade was reached by stairs. The dome and the southeast facade of the church were about to be demolished in those years. He mentions in the north of the church that there was once a priest's house or an additional building belonging to the church. He also mentions the presence of a narrow-faced, flat-roofed chapel at the southwest of the Egemelik street, called the "Juvaran" (İmamoğlu, 2014, pp. 45-46).

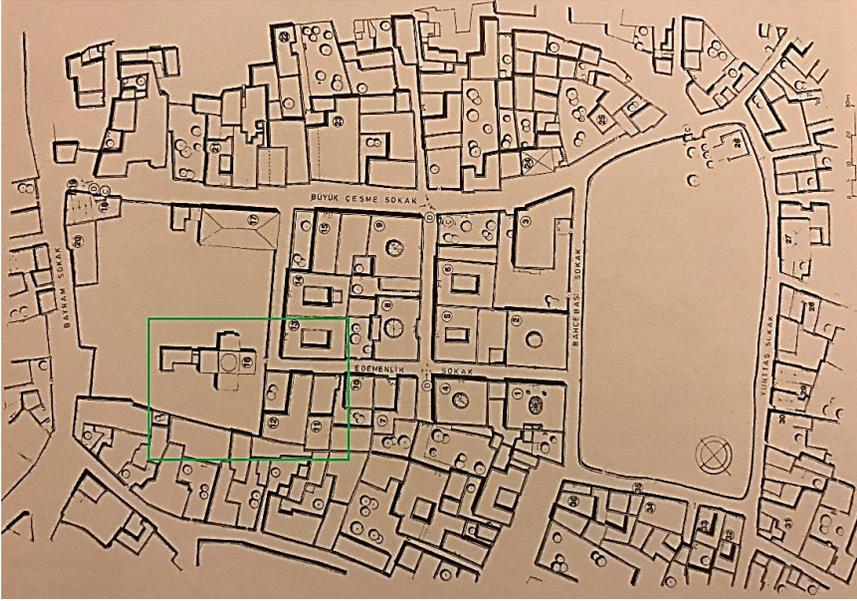


Figure 14: Buildings Described as “Big Church” and “Small Church” in the Map of Büyükbahçe and of Immediate Surroundings Drawn in 1940s (İmamoğlu, 1998, p. 158)

In Alboyacıyan’s book there have been a plan of the Protestant Church that Alboyacıyan mentioned it, and a perspective drawing (Figure 15, 16). The only drawing taken place in this book of 2500 pages has belonged to this building. Nevertheless, when this drawing and the photo of the Protestant Church included in this book have been examined it has been understood that this drawing has not belonged to this church. The size of the building taken place in the drawings has been nearly twofold of the church indicated in the documents of PABCFM, (about 45x24 m.). It has been seen that the church in the drawing has had a basilican planning schema with three naves. Naos formed by two lateral naves, and one central nave which were connected to the spaces of prothesis/altar. On top of the central nave, a dome pedestal raised from the saddle/gable roof has been taken place. The top covering of the building which was constructed by ashlar with masonry construction method was a gable roof. Double line rectangular windows, and oval shaped windows admitted the light inside the building. There were one main entrance and two sideward entrances. Two small bell towers have been rising upward from both sides of the main entrance.

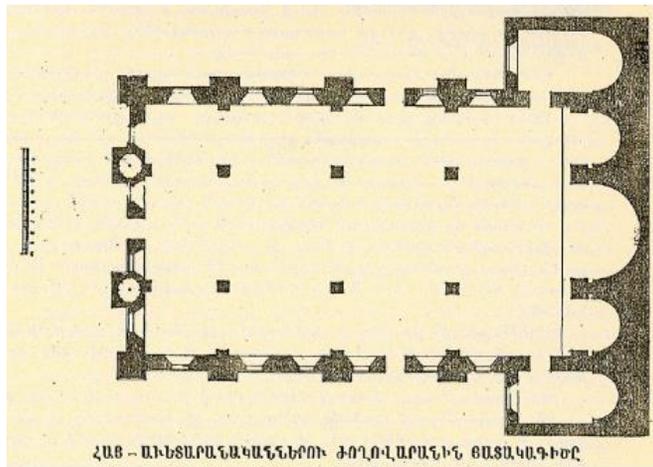
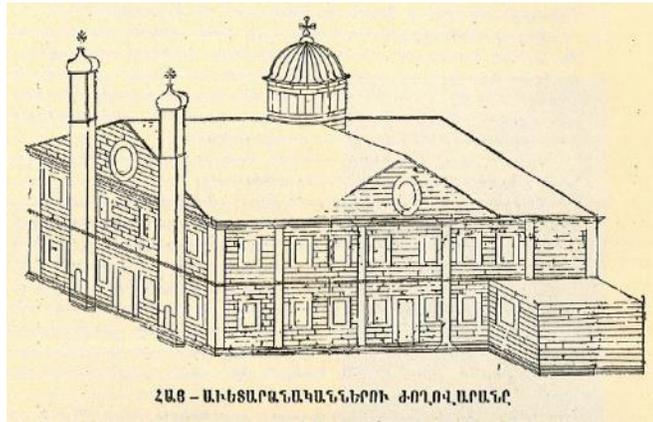


Figure 15, 16: Alboyacıyan's Perspective and Plan Drawing (Alboyacıyan, 1937, p. 1051)

When the studies done on Protestant churches, and the architectural characteristics of the other Protestant churches in Turkey have been examined it has been seen that the building in drawings of Alboyacıyan has not reflected the typology of a Protestant church (Tuğlacı, 1991, pp. 320-321; Hançer, 1996, 54-116; Küçük, 2005, pp. 113-116; Malkoç, 2011, pp. 243-265). When these drawings, and the photo taken place in the book, which has noted that this photo has belonged to the Protestant Church (Figure 11), and the building of the Protestant Church specified in the old photos of Kayseri (Figure 17-18) have been compared it has been found that drawings and photos have not matched. The roof was not a flat saddle roof as it was stated in the drawing. Facades and the roof were ornamented with four triangle pediments placed above the horizontal structure of the entablature supported by columns. The tholobate has been wrongly placed. It should be setback according to the photo. The two bell towers seen in the drawings of the frontal façade, and diaconicon in the photos have not

been seen. At the end of these evaluations, it has been thought that drawings did not belong to The Protestant Church, and a different drawing of a church included in the book.



Figure 17: An Old Kayseri Photo and The Protestant Church in the Early 1900 (Karakaya & Karakaya, 2002, p. 37)



Figure 18: An Old Kayseri Photo and The Protestant Church in the Early 1900 (M. Şenalp archive).

As a result of investigation on the spot of the district, a masonry house with its wide and tall arch which has been drawn attention, has been seen in the quarter where the church and its additional buildings existed. (Figure 19, 20, 21, 22). This building has been constructed with the traditional construction techniques and building materials, and registered as “a house” by the Ministry of Cultural Affairs. This house, afterwards, has been formed by ashlar walls inside the arch, evidently understood that it has belonged to a different period. When it has been examined in details, it has made an impression that this house may not constructed as a house originally, but was constructed in accordance with the architecture of church building or additional buildings like Pastor residence, school etc.

By adding masonry walls inside the wide arch that most probably carried a dome previously it has been conveyed to a house afterwards.



Figure 19, 20, 21, 22: The House Presumed as the Remains of the Protestant Church's Additional Buildings.

The maps of Euthycides, İmamoğlu, Demir and Çabuk have supported the idea that this building was likely to be a church or its additional building. Nonetheless, when the traditional houses (Gündoğdu, 1986, pp. 278-297; İmamoğlu, 1998, pp. 157-171) existed in the district but not survived today have been examined from the viewpoint of architectural shapes⁹¹ it has been seen that many buildings constructed as dwellings had wide arches, halls with domes, vaulted rooms, porches, colonnades. Since the abovementioned maps have not been designed by using professional measurement techniques, and the land registers are not precise it is difficult to say convincingly that this building remains belong to a church. Only the exterior measurements of the building have been given in the documents, and today, the walls of it have collapsed to a great

extent, therefore, previous measurements and current measurements of the building cannot be compared. Yet considering the closeness of the location, it has been presumed that this house has been constructed by using the arches, and ashlar of the collapsed church or its outbuildings. The surviving arch has been assumed as a part of façade of the church, or a component of drum of the dome

Schools

The schools, important segments of Kayseri Station have spreaded through diverse non-muslim districts, but predominantly located in the surroundings of the Protestant Church site. Sabbath Schools were in service in the churches, mission houses; separate buildings for them were not built. Nursery schools, primary, secondary, and high schools were in service in the churches, or mission houses, or in the collectively used buildings if the congregation was minor in number, or minor in the districts. If they needed they constructed buildings for education in various sites.

According to Alboycıyan, the Protestants had two primary schools, one for girls, one for boys, in Kayseri. These two schools were fulfilling their instructional operations under the name of Azkasiratz Ingerutyen Varjanner, and belong to the Society of Milletsever. The first school was the Protestant Primary School, Poğokanneru Nakhargaran where Protestant boys were attending; the other school was established in the Büyükçeşme Street, and was the Girls' Primary School, Poğokanneru Ağçigneru Varjarian. It has been said that the Boys' School was formerly located in Kicıkapı quarter, later in time, it was moved to Eybakapı District where was about 1 parasang (about 5 kms) away from the Church (Alboycıyan, 1937, pp. 1128-1129).¹⁰ Another information related to this school's location or the architectural features has not been encountered in the documents. However, when the jizya register book-keeping for non-muslim districts have been examined, it has been seen that Eybakapı, or similarly pronounced name of a quarter among none of the districts for Muslims or non-muslims existed (Yörük, 2013, pp. 349-466). It has been thought that there has been a spelling mistake, or disinformation in the interrelated document.

It has been indicated in the PABCFM documents that the Protestant Church built in 1877, and the school nearby were the best constructions in Kayseri Station from the viewpoint of architecture and facilities. The Girls' Seminary opened in 1862 additional to the Boys' school was in service for instruction until 1876 at the church, and mission houses, and started to its education in a separate building constructed near the Church in 1876 (Şahin, 2018, pp. 109-123). It has been emphasized that this two-storey-

¹⁰ The Armenian text was translated by Kevork Taşkıran during the personal interview

building located near the Church was an imposing construction with its 72x34 feet (22x10m.) size, with its large and spacious rooms, and its large conference hall (PABCFM, R. 589, N. 44). R. Oberhammer and H. Zimmerer, who visited the Town in 1890, described this building as “a masonry building with barred windows, large halls, and large courtyards”. They also mentioned about a Protestant Church located next to it, and a big Armenian Church which was the Surp Khaç Church (Eravşar, 2000, p. 239). Unfortunately, this school located in the Büyükbahçe District has not been survived today.

It has been indicated that the Argeos High School, opened as a Boys’ High School, were located near the Farnsworths’ House (Demir, 2008, p. 91). The educational activities were mandatorily ceased due to the political chaos experienced in Kayseri, in 1883. The Nursery School and Girls’ School were closed, and the students of Argaeus (Erciyes) Boys’ High School were transferred to the Nursery School building until 1896. When the Nursery School was opened again in 1896, the students were retransferred to a place in the Turkish district, and used as a Girls’ seminary in an old mansion where a pastor lived. When the Girls’ Seminary was opened again Argaeus High School returned to its original building (Şahin, 2018, pp. 211-224). Although there has been knowledge that the school was located in Kіçikapı Emir Sultan District (Yılmaz, 2016, p. 75) there has been no knowledge about the architecture of the building, usage, or exact place of it.

In 1891, a Nursery School was opened under the auspices of Lend a Hand Society in the center of Kayseri. In 1894, when the capacity of the students of the Nursery School increased, extra two buildings, which were suitable to be attached, were bought, and the required restorations were made. When these two buildings were attached together a big and single building came out, and the Nursery School was moved to this new big building (Şahin, 2018, pp. 114-115, 154, 205) There have been no available documents in which the exact location of the school (said to be near the Church) has been determined. Nonetheless, a sketch of the Nursery School has been obtained in the archives. According to this sketch, it has been seen that two buildings bought had adjacent patios, and these two patios were connected by demolishing the wall between them to form a big patio. There was a house opening out onto the patio which was surrounded by streets on both sides, and there were a barn, a kitchen, and a kiosk, as well (Figure 23)

In 1909, when the number of students increased, to build a new nursery school and a primary school was inevitable, and construction expenses were met by W.B.M. (The Woman’s Board of Missions). In this new school, location of which could not be specified, along with the rooms for educational facilities, lodging buildings for American and local

teachers, and rooms/halls for the meetings held for mothers were planned (Demir, 2008, p. 188).

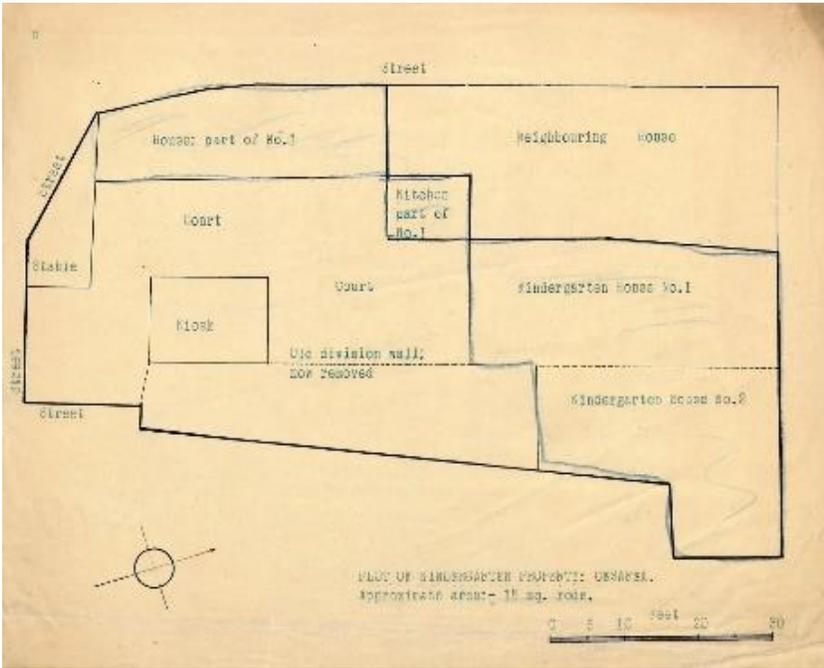


Figure 23: The Settlement Plan of the Nursery School of Kayseri (Digital Records, ABANEMEIO56584032)

The Other Buildings

Some other buildings, that the Protestants used for social activities, or for medical services, and for providing income, have been seen in the documents along with the buildings used in the town were predominantly churches, schools, and dwellings. In the tax register book numbered 182, dated to 1880s, it has been mentioned that three “Han”s, or “Caravanserai” (a commercial complex including some other facilities for travellers in ottoman Empire) were made over to the Church (KAYTAM (Erciyes University, History of Kayseri and Neighbor in Areas Researches Center) Archives, No. 182, p. 297; Keskin & Cömert, 2007, pp: 280-309). There has been no knowledge about the names or the locations of these “Han”s. When the records book dated 1872 has been examined it has been seen that there were 21 “Han”s in the town center. However, all of these “Han”s have been described as not large scaled structures instead they were small and unqualified buildings for travelers to stay at a reasonable prices (Demir & Çabuk, 2012, p. 153). Those times a few large scaled “Han”s existed in Kayseri, therefore it has seemed not to be true that 3 of them belong to the Protestants by the viewpoint of the number of the members in congregation and the economic situation of them. When it has been thought that Muslim

and non-muslim foundations were buying shops in commercial complexes (accommodating various trade types including travelers' needs) like Kapalıçarşı (Bazaar), Vezir Han, Gön Hanı to obtain income, we can understand that the statement of "3 Han"s has corresponded to ownership of "3 shops" in these complexes nearby the mission house, or corresponded to 3 small "Han"s ownership in the other districts by the Protestants.

With the aim of preventing young people from doing unnecessary works, and wandering around, the Protestants, who took precedence of the children's and young adults' training, founded clubs. In this way, it has been targeted to make young people busy with engaging in sportive activities, and music, and helped them develop themselves ethically by communing in gatherings. In addition to the Men's club servicing in Talas before, another club was founded in 1908 in the center of Kayseri. The building used for this new club had 4 rooms. One was for reading, one for private conversation and individual interview, one for evening class, and a store, and the fourth and largest room was organized as a gymnastics, physical education hall to attract the attention of the people around. In this hall, workouts, exercises were done by the help of hoops, trapeze, horizontal bars, parallel bars. Besides, this hall was used as a meeting hall in the Sunday evenings. Stitching clubs founded for women and young girls carried out their activities mostly in the mission houses and schools (PABCFM, R. 628, N. 172).

When the land registers of the properties of the year 1905 belonged to the American Board in the center of Kayseri, have been examined the following statements have been found as:

"a church, a girls' seminary, a hospital, a house, and a barn have been located on a land of 2000 m² surrounded by solid walls. 2/3 of this land has been divided into four by the streets".

Additionally, it has been added that:

"Two houses, and a large porch for the nursery school students' usage have been located on a land of 17.200 m²."
(PABCFM, R. 618, N. 79, 80).

The land mentioned here has been the building lot in Büyükbağçe District. The dispensary built in 1903 on the same lot cannot be survived today.

CONCLUSION

The American Board initiated the missionary operations for dissemination of evangelicalism in many countries of the world. Either with their operations, or with their buildings used for maintaining these operations, and with their life styles influenced mass of the people in the

lands of Anatolia in the 19th century, as well. This impact was not only on the converted people but also affected the whole social and physical development of the town. The districts where they settled down were generally in the central locations of town, and these districts were financially, socially and culturally affective. For settling down they chose the districts where non-muslim population was in majority. The influence they had on the prestigious families, and on the life conditions spreaded out to the other districts of the town in time. In this context, the missionaries initially settled down in the cosmopolitan quarters around the Citadel (İç Kale) which was commercially active, and was accepted as the heart of the town.

In those days' services took place in collectively used buildings. As the evangelicalism spreaded, and the number of the members of the congregation increased, first negative reactions against the missionaries by the local people lessened. Even missionaries gained more respectful status and then they settled down in important and strategic districts as a result of all these factors. With schools and seminaries, sanctuary buildings, dispensary, mixed-use missionary residences they continued to increase their congregation (Figure 24).

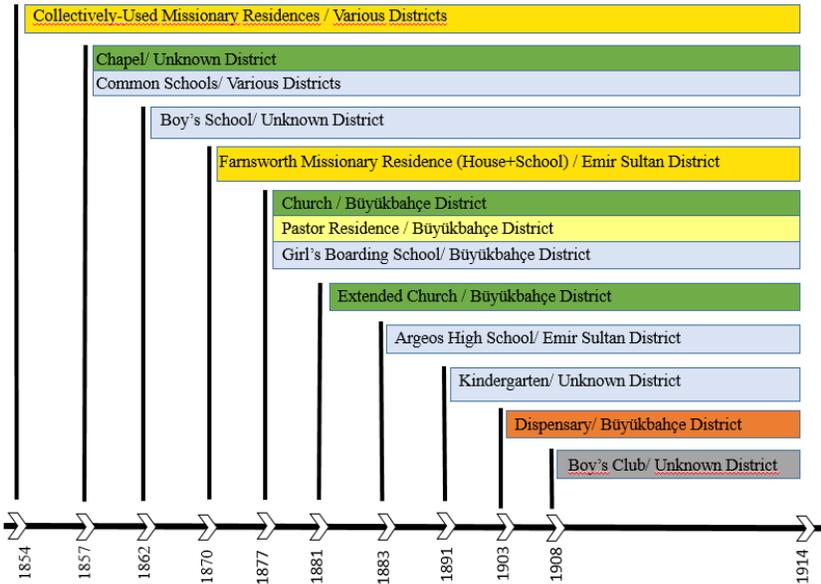


Figure 24: In Kayseri, the Protestant buildings' usage schema

From time to time, the buildings used for services and operations were rented, or existing properties were bought, and sometimes a building land was purchased and a new building was constructed. Buildings bought were renovated according to the living standards, and luxury that the

missionaries were used to live with. Sometimes they built up storeys on top of the building bought, or added construction materials, and large, spacious residences were designed in accordance with the function of the building usage. By using local masonry, and employing master builders' new buildings have been constructed with the compatibility of traditional and local construction characteristics with the existing buildings of the districts. By this way, simple, modest, and practical buildings reflecting the architectural and religious styles of the missionaries have been built. In compliance with the needs these buildings have been enlarged, or new buildings were bought. To meet these expenses, along with the generated revenues of the commercial properties, fees of the schools, contributions of the American Board, or donations received from the various Protestant institutions, collected donations from the local people have been spent. Until beginning of the 20th century, these efforts and process have been continued in a systematical way although the operations have been faltered due to political disorders from time to time.

The operations, which were resumed actively until the World War 1st broke out in 1914, were ceased by the government throughout the war, and majority of the missionaries went back to their home. By the requirements of the governmental policies, the majority of the Armenian people in 1915, the Greeks in 1924 had to migrate from the region thus, most of the missionaries did not come back to the region. In consequence of which most of the Protestant operations could not be started again after the war. Like any other Churches congregation of which went away and became vacant the Protestant Church was desolated to demolish. Although the buildings in Talas and Zincidere were preserved, owned properties in the center of Kayseri were passed into the hands of the other owners. Some of the schools were maintained as schools again by the government, most of the other buildings were converted to dwellings, or left to demolish. In the scope of this study, by the documents in the archives, and by architectural research, it has been aimed at reminding the Protestant buildings which were important parts of town culture, and traditional architectural values, but mostly ignored. It has been also aimed at being a guide to future studies, and also this study's evaluation for the preservation works to be done in the region.

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CHAPTER 8

**EVALUATION OF REUSED HISTORICAL CHURCHES AS
MOSQUE: AN EXAMPLE KARAMAN FISANDON
MOSQUE**

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INTRODUCTION

Historical buildings have tangibly symbolized their society's culture, life style, artistic approaches and architectural understanding since they were built. Over the time, these structures could be abandoned or lose their original functions because of the changing in the life style of that society, growing population, wars and conquests. Historical buildings that cannot be used today with their authentic functions or cannot meet the needs of users with their current functions face the danger of deconstruction. As a contemporary conservation approach, the most important intervention that prevents the loss of historical buildings is to use the cultural heritage by adapting it to today's conditions with both their original function and new usage (Ahunbay, 2017, p.97). Re-functioning provides opportunities of new usage, including interventions meeting the spatial requirements of new function, by preserving the architectural, aesthetic, social and cultural values of historical buildings (Açııcı & Konakoğlu, 2019, p.215).

Re-functioning concept appeared after World War II as a revalue of abandoned historical building. In 1931, Carta Del Restauro proposed a new approach to preserve historical buildings which had lost their original functions with new usage. Similarly, well-known Venice Carter in article 5 suggested to all countries to use their historical buildings for proposed protect them. It could be said that first reusing application in Turkey was opening of Topkapı Palace as museum in 1924 (Uğursal, 2011, p.10; Ahunbay, 2017, p. 97). It is very important that the first example of giving new museum function to a historical building was a church in Turkey. Hagia Eirene Church, located in the courtyard of Topkapı Palace, was used

as a museum in 1846 where important artifacts were exhibited, and in 1869 it was named as the Museum-i Hümayun (Imperial Museum) (Aydın & Şahin, 2018, p.66). It is seen that the worship places of different religions were used by societies from the Pagan buildings since early period of history. The first practice related to the transformation of worship buildings in the Ottoman Empire is Osman Bey Tomb which was built on as a Byzantine church in the 14th century. The transformation of the largest church in to a mosque is a common application in concurred lands in Ottoman Period and in that period other churches were also converted in to masjids or mosques if needed (Küçük & Eyüpgiller, 2018, p.52). The Hagia Sophia Church, built in 537 as a church is most well-known building converted from church to mosque, converted into a mosque after the conquest of Istanbul. The Hagia Sophia was used as a museum from 1935 to 2020. In 2020, it has been converted from museum to mosque again. Zeyrek Mosque (Pantokrator Monastery Church), Fethiye Mosque (Pammakaristos Church), Kariye Mosque (Chora Manastir Church) in Istanbul; Circis (Sirkis) Prophet Mosque in Sanliurfa; Yozgat Church Fatih Mosque are examples of structures of the church into a mosque in Turkey. On the other hand, Cordoba Cathedral in Spain is one of the important church structures that have been refunctioned in the world. Built on a pagan temple as a Catholic church in the 6th century, after the Umayyads conquered the Iberian Peninsula from 711 to 784, the interior was divided into two and became a place of worship for both Muslims and Christians. In 784, the building was completely used as a mosque. The building, which was converted into a church again in 1236 and its function has continued as a church till now (Yüceer, 2016, p.438).

The province of Karaman, where the study was carried out, is a city that has hosted the Hittites, Phrygians, Roman and Byzantine civilizations and works of these periods throughout history. After the Anatolian Seljuk State, this city which was dominated by the Karamanids, joined the Ottoman lands in 1474 after long years of wars with the Ottomans (Tapur, 2017, p.104). Today, historical buildings such as Karaman Castle, Hatuniye Madrasa, Çeşmeli Church can be given as examples of the cultural heritage that were reused in Karaman.

The city remained under Byzantine rule until the Seljuks. Therefore, it is possible to come across many Byzantine structures in the city. Fisandon (Dereköy) Mosque is a Byzantine church that has survived to the present day in good condition since it was built. Fisandon Mosque, where its function has been changed and continued to be used by a society of different beliefs, is one of the important and successful examples of re-functioning the concept.

This study is important in terms of searching adaptation process of churches to mosque, examining of spatial differences between old and new

function and also user perceptions related to these kind of reusing activities as well. Within the scope of the study, on-site investigations, library and archive searching, old photographs, restoration and drawings of the building were used. Study is supported by a questionnaire for understanding of user perception.

1. HISTORY OF FISANDON MOSQUE AND ARCHITECTURAL FEATURES

The mosque is located in Fisandon (Dereköy) Village, 7 km from Karaman city center (Figure 1). The Byzantine Art Historian Strzygowski was the first researcher to mention of this building. And also J. W. Crowfoot is among of the researchers who were done preliminary research. Although the exact date of construction is not known, it is estimated that this building was a Byzantine church and was constructed in between 9th and 10th century. The building without an inscription plates was converted into a mosque in the second half of the 16th century by Karaman Governor Yusuf Sinan Pasha, who died in 1573-1574 and was buried in a tomb next to the Mevlana Tomb (Eyice, 1971, p.84-85). Fisandon mosque is one of the most important structures of the Central Anatolian Christian era and one of the most valuable works in terms of art history in the middle of Anatolia (Eyice, 1971, p.88). (Figure 2).



Figure 1. Location of Dereköy (Google Earth).

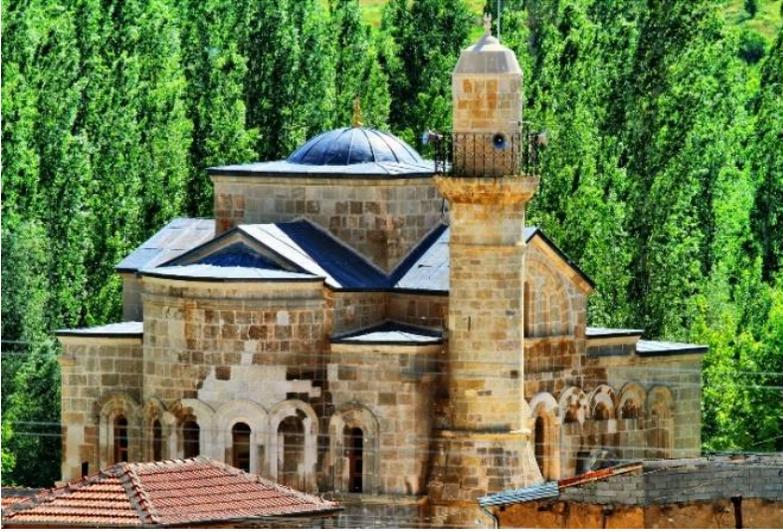


Figure 2. Fisandon Mosque General View (Anonymous).

The building was built in a typical Greek Cross plan type (Figure 3). The church is in accordance with the capital Istanbul scheme in terms of plan. Four square columns in the interior of the church form this cross and support the dome. The columns are connected to each other and to the outside walls with arches. The middle part is covered with a dome, the arms of the cross are barrel vaults, and the corner cells with cross vaults. (Eyice, 1971, p. 87-88; Karpuz, 2009, p. 327) (Figure 4,5,6).

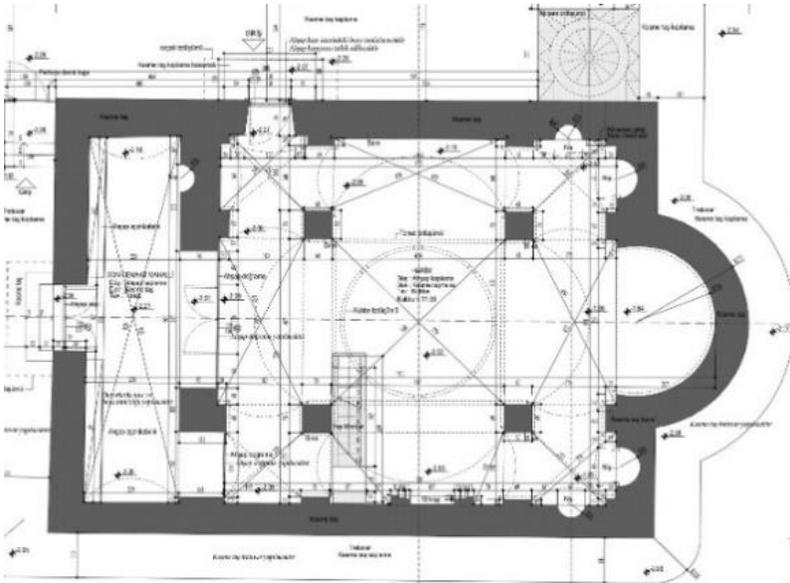


Figure 3. Ground Floor Plan (A Proje Project Report, 2006).

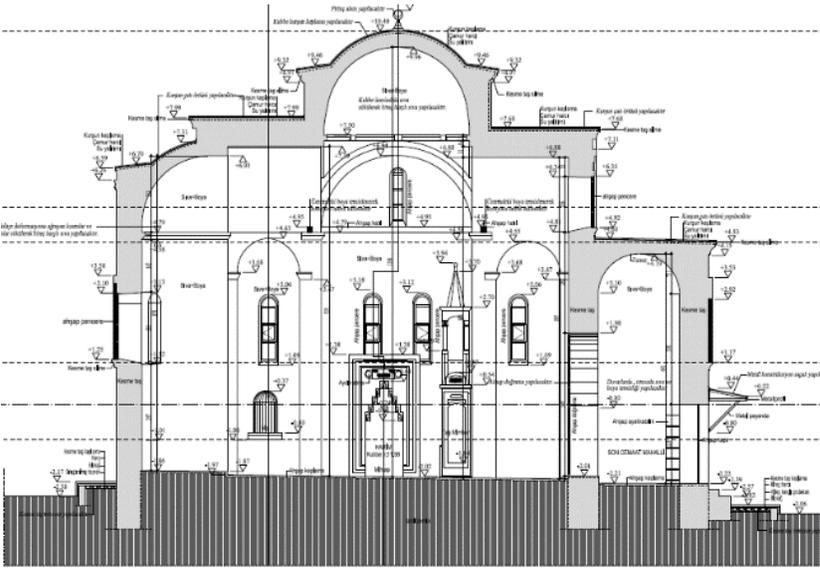


Figure 4. Section of Building (A Proje Project Report, 2006).



Figure 5. Tomb and Vaults



Figure 6. Corner part of building cross vaults space cover

In the photographs of the building dated 1977, the hand-drawn decorations in the dome of building, which do not exist today, were made during the period when it was used as a mosque (Figures 7-8). The building, which has two entrance on the north and west facades, is illuminated by windows on all four facades. The altar and pulpit made of stone are quite modest (Karpuz, 2009, p.328). Cut stone and rough cut stone were used in its construction, but cut stone was used in all parts that underwent repair. The inner vaults have been made with hipped roofs outside (Karpuz, 2009, p. 327-328) (Figure 9,10,11,12).

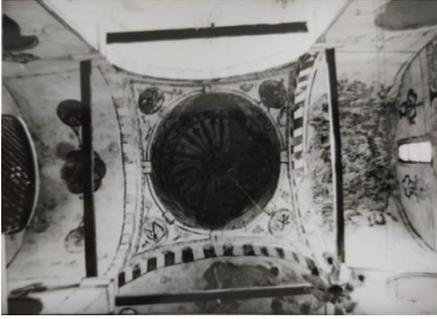


Figure 7. Hand-made Decoration on Dome Surface 1977(Archives of Konya Regional Dir. of Foundations).



Figure 8. Current view of dome



Figure 9. North Façade 1976 (Archives of Konya Regional Dir. of Foundations).



Figure 10. North Façade



Figure 11. Relics of narthx on west façade, 1976 (Archives of Konya Regional Dir. of Foundations).



Figure 12. Unauthentic extension to narthx, 1976 (Archives of Konya Regional Dir. of Foundations).

The narthex was almost ruins and consists of the remains of arches and niches before the radical restoration of western facade of building. The vault cover of narthex was completely disappeared. After the restoration, the narthex section was added to the west entrance (Eyice, 1971, p. 86) (Figure 13).



Figure 13. Narthex door and western façade.

The center of the façade above the entrance door is divided into two part by a horseshoe arched molding (Figure 14-15). The upper part of the molding is enlivened by a row of arches two of which are window openings. There is a window and two niches in the tympanon part of the barrel vault on the north facade. In the lower part, there are decorated arches in the form of a horseshoe arch, some of which are emptied and used as windows. There is colonnade half-rounded between them (Eyice, 1971, p. 88) (Figure 16-17).



Figure 14. North Entrance and Inscription Plates.



Figure 15. Detail of Inscription Plates.



Figure 16. North Façade.



Figure 17. Detail of North Façade.

There is a stone with a Greek inscription on the entrance door. According to S. Eyice, in the inscription: "*This is the door of the Lord / Righteous people enter him.*" writes. Animal figures are engraved as reliefs (Eyice, 1971, p. 87; Karpuz, 2009, p. 328). The south facade is symmetrical with the north facade. Some of the arches have cross embroidery and floral motifs on rosettes (Figure 18,19).



Figure 18. South Façade.



Figure 19. South Façade Arch Detail.



Figure 20. East Façade.



Figure 21. View of main apse.



Figure 22. East Façade decoration details in 1976 (Archives of Konya Regional Dir. of Foundations). Arşivi).



Figure 23. East Façade details after restoration.

On some arches on the façades, a few crosses on rosettes are rosette embroidery can be seen as decorative elements. Similarly, there is a rosette cross which decorated with rays on frontal façade of arch (Eyice, 1971, p. 88) (Figure 20,21,22,23).

2. TRANSITION FROM CHURCH TO MOSQUE

Church structures differ from mosques in terms of spatial organization and architectural elements. After Yusuf Sinan Pasha Intervention, this church was transformed into mosque and the direction of worship in the east-west direction in the church was changed to the southeast as a direction of Mecca. (Figure 24,25,26,27). Since the entrance doors to the west and north do not interfere with worship, the entrances were not changed. After the building was converted into a mosque, a simple mihrab niche and a minbar were added to inside of the building and a minaret was constructed at the northeast corner of the building (Figures 28,29,30,31). The minaret is entered through a door opening from the inside of the mosque. The type of stone of the minaret is made of similar to that of the church, however, especially due to water absorption, some deformation could be seen both on minaret and church façades. It can be said that the minaret is integrated with the original church structure due to the fact that the minaret does not exceed the upper dome level of the church in terms of size, proportion, and its material similarity.

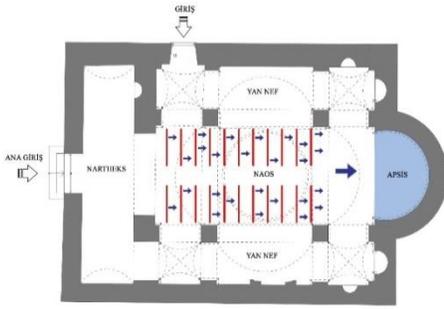


Figure 24. Church worship direction (Base on *A Proje Drawings*).

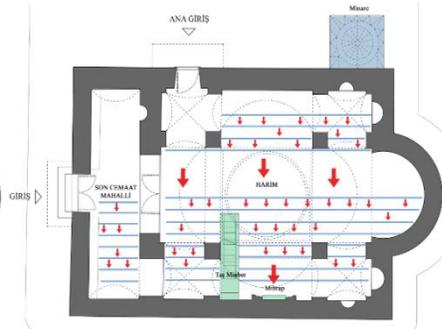


Figure 25. Mosque worship direction (Base on *A Proje Drawings*).

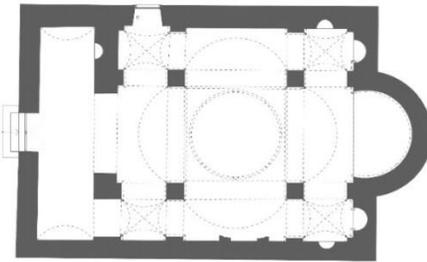


Figure 26. Ground floor Restitution Project (*A Proje Project Report, 2006*).

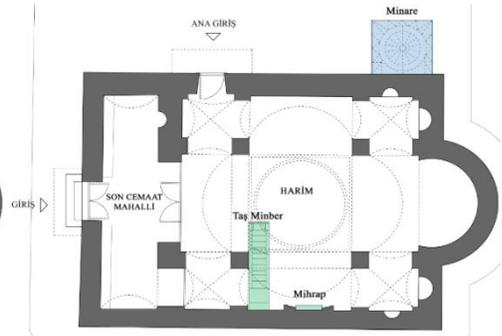


Figure 27. Addition of Minaret, Mihrab and Mimbar (*A Proje Project Report, 2006*).

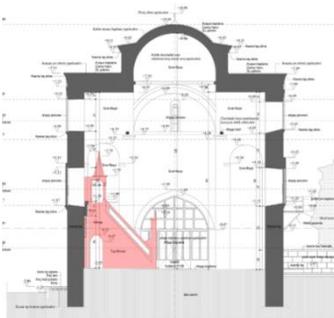


Figure 28. Minbar and Mihrab on section (Base on *A Proje Drawings*).

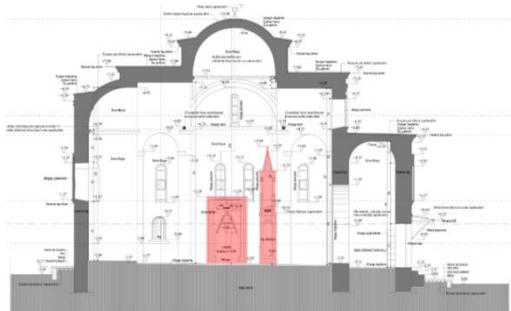


Figure 28. Minbar and Mihrab on section (Base on *A Proje Drawings*).



Figure 30. Mihrab Addition.



Figure 31. Mimbar Addition.

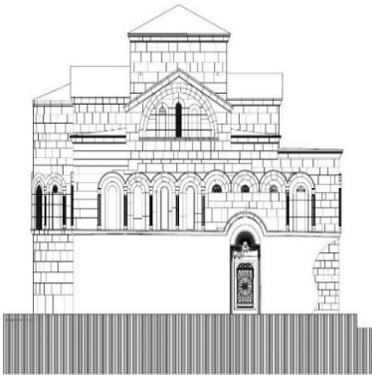


Figure 32. North Facade Restitution Project (A *Proje* Project Report, 2006)

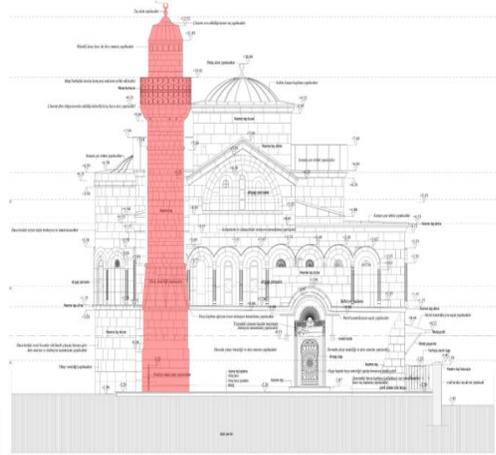


Figure 33. Minaret Addition (A *Proje* Project Report, 2006)



Figure 34. North Façade and minaret.



Figure 35. Minaret Entrance

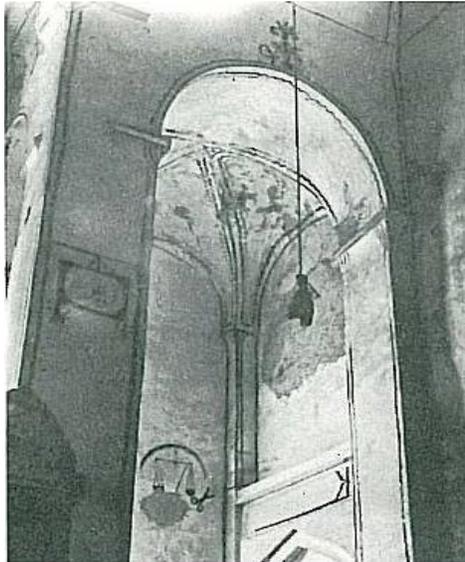


Figure 36. Libra, Sword and Scissors Frescoes (Eyice, 1971).

İ.H. Konyalı stated that the paintings on the west wall were plastered over. It is found in Smirnof's 1895 notes that there are frescoes on the walls of the church. He says that there are traces of painting under the whitewash layer. However, S. Eyice could not find these traces in his examinations in 1970 (Figure 36). He stated that the traces were probably scraped off. During the interviews with the villagers, it was learned that there were

frescoes on the west wall, scales, swords and scissors in the interior, but they were engraved by the villagers. The rosettes and cross decorations on the facades have not been changed, and many of them have survived (Konyalı, 1967, p.290).

3. USER QUESTIONARE AND THEIR PERCEPTION

"Does worshipping in a building converted from a church into a mosque disturb people psychologically?" A survey was conducted with 20 people as an answer to the question.

According to the results of the survey the participants replayed the question *"Does it feel the same as worshipping in a building built as a mosque?"* 75% of participants feel psychologically strongly comfortable, 20% partially comfortable and 5% answered as a no-comment. The people of the village has good knowledge related the history of the church and its being a building that has been converted from a church. Since it has been used as a mosque for a long time, it has adopted the building and most of the prayers do not consider the building to be a church while they are praying (Figure 37).

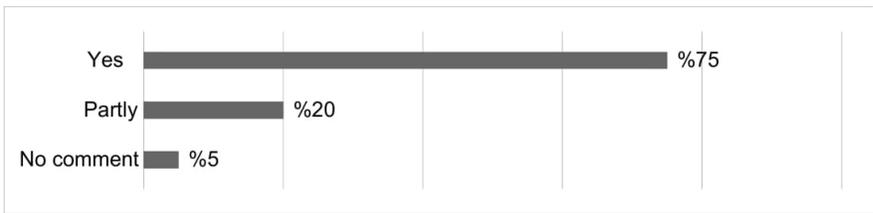


Figure 37. Does worshipping in a building converted from a church into a mosque disturb people psychologically?"

"Would you prefer to rebuild a mosque rather than convert the church?" for this question, 85% of the participants answered no, 10% said yes, and 5% no comment. Most of the participants think that it is correct to make an assessment under the conditions of the period, and they find it appropriate to use an existing building instead of building a mosque (Figure 38).

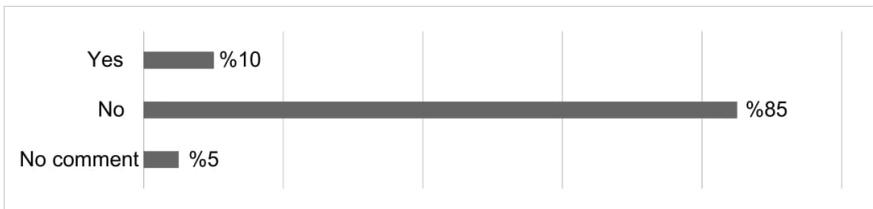


Figure 38. Would you prefer to rebuild a mosque rather than convert the church?"

"Does the building previously built as a church in east-west direction create a discomfort in prayers?" 80% of the participants answered no, 10% yes, and 10% no comment. There was no need for any intervention in the structure, as there was no situation restricting the pure order on the southern facade. Therefore, the majority do not experience any discomfort during prayer (Figure 39).

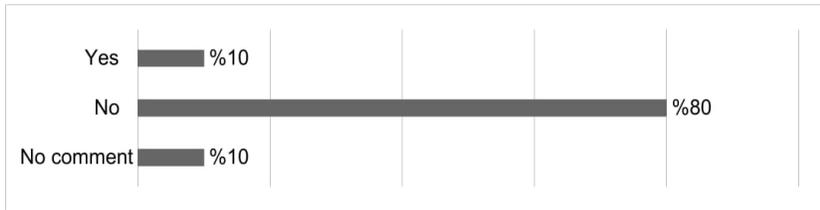


Figure 39. Does the building previously built as a church in east-west direction create a discomfort in prayers?

"Does it bother you that there are crosses on the arches on the facade and the Greek inscription at the north entrance?" 70% of the participants answered no, 20% yes, and 10% no comment. The congregation knows that the Greek inscriptions on the façade and the decorations on the arches are elements from the church. The frescoes in the interior were carved. The decorations and the cross on the façade do not disturb the majority of the participants (Figure 40).

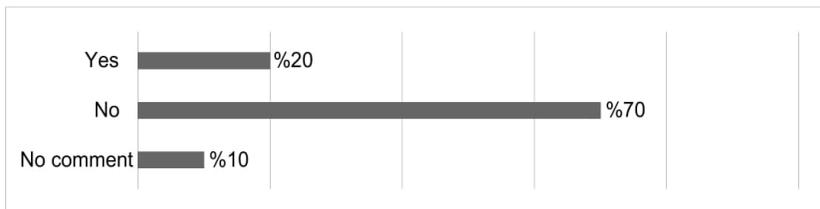


Figure 40. Does it bother you that there are crosses on the arches on the facade and the Greek inscription at the north entrance?

4. RESULTS

Re-use of historical buildings, which are historical documents, using with appropriate functions, is important in terms of bringing abandoned historical buildings to our cultural world. Within the concept of re-functioning, worship structures need a special attention due to the sacred values / meanings. Many abandoned churches and similar buildings should be included in daily life with qualified reuse activities in Anatolia. It can be observed that this application has important benefits in historical, cultural, social, economic, artistic,

tourism and economic contexts. In this context, the conversion of church structures into mosques is important for protection of such structures and their survival.

The Fisandon Mosque, located in the village of Dereköy in Karaman, was built on a rock mass in the Byzantine Period. It has Greek cross plan type and distinction of being one of the important structures that survived until today. The reuse of such a building with appropriate functions is very important in term of protection of sacred meanings.

After the building was converted into a mosque, no major interventions were made to spoil its authenticity. The building started to be used as a mosque by adding a mihrab, minbar and minaret. It is learned from written sources and village people that there were frescoes in the interior. But the scraping of the frescoes by the villagers is the most important intervention to the authenticity of the building. When examining examples, it can be said that the building can be adapted to the new function with temporary measures without damaging the elements in its original identity with technical solutions and interventions in a qualified reuse process. Dome, barrel vault and cross vault are used as the covering system and the vaults are turned into a barrel roof from the outside. Greek inscriptions, rosettes, crosses and floral ornaments on the facades have survived to this day. Apart from these interventions, the building has preserved its originality in terms of architecture and structure.

A questionnaire has been conducted regarding the acceptability of the building by the users. The effect of the church's adaptation to the mosque on the users was generally positive. It has been observed that one of the most important reasons for this was that they did not observe the periods when the building was a church, and they recognized the building as a mosque. The majority of the users are not psychologically disturbed. It was observed during the survey that the village people had a command of the history of the building, had a consciousness about the building and adopted the structure. It adopted the building as a cultural heritage and supported its preservation. In the study, it is understood that the adoption of the structure by the users and the psychological integration in the re-functioning of religious buildings are of great importance in the survival, preservation and transfer of historical structures to future generations. Dereköy Fisandon Mosque sets an example in the reuse of such structures with the ownership of the users. With more conscious and scientifically based conservation interventions, qualified practices should be observed in our cities.

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CHAPTER 9

**DİLEK PENINSULA - GREAT MEANDER DELTA
NATIONAL PARK IN THE CONTEXT OF PROTECTED
AREAS**

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INTRODUCTION

Since the nineteenth century; in parallel with the developing technology, pressures on natural resources have increased as a result of industrialization, population growth, urbanization, various types of pollution, forest fires, drying of wetlands, excessive and irresponsible use of resources. Particularly in the past and present centuries, modern technology has enabled people to enjoy nature without limits (Yücel and Babuş, 2005).

The rapid consumption of natural resources, the increasing amount of pollution and environmental problems that have reached a global dimension have brought the obligation for countries to act in cooperation (Gümüş et al. 2010). In many countries around the world, sustainable use of natural, historical and cultural values has been planned and such areas have been declared as “protected areas” as a result of national and international efforts (Yücel and Babuş, 2005; Kılıç, 2018).

Protected areas are vital to the continuity of the world's natural evolution. It is also an obligation to ensure the status of endangered species and ecosystems by the effective measures as protected areas, for the conservation of biodiversity and the continuity of human life (Yıldırım and Erol, 2012).

International Union for Conservation of Nature (IUCN) (2019) defines protected area as “a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values”. Protected areas - national parks, wilderness areas, community conserved areas, nature reserves and so on - are a mainstay of biodiversity conservation, while also contributing to people’s livelihoods, particularly at the local level.

Protected areas are at the core of efforts towards conserving nature and the services it provides us - food, clean water supply, medicines and protection from the impacts of natural disasters. Their role in helping mitigate and adapt to climate change is also increasingly recognized; it has been estimated that the global network of protected areas stores at least 15 % of terrestrial carbon (IUCN, 2019).

The identification of protected areas at the international level began in 1872 with the announcement of Yellowstone National Park in the USA. This movement was reflected in other countries and played a leading role in the establishment of protected areas. Different countries around the world have taken various measures for the sustainable and purposeful use of resources through legal processes and international conventions. In our country, this legal process started more towards the end of the 1950s and the laws, regulations, legislations and various conservation policies on this issue caused significant increases in the number of protected areas throughout the country (Kılıç, 2019).

Today; In addition to the main objective of conservation of biodiversity, the sustainable use of natural resources and conservation of ecosystems and integration with wider social development processes are taken into consideration and the areas suitable for these targets are taken under protection. The well - managed protected areas not only support the health of ecosystems and landscapes; It is stated that it provides many benefits for people with different ecosystem services such as clean water supply, food safety and climate regulation. Protection of these areas has become an important part of sustainable development strategies as it supports the local and national economy (Katircioğlu, 2019).

National parks which have an important place among the protected area statuses and the first type of protected area in the world; carry high natural, historical, archaeological, recreational, scientific and aesthetic values and in which wood gathering, timber cutting, mining, and hunting is prohibited (Gümüş et al. 2010).

According to IUCN, national parks are; Large natural or near natural areas set aside to protect large - scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which

also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities (IUCN, 2019).

Zonation within these parks include:

- Protection zone, where at least one - third of the total land is protected against all usage except for scientific research;
- Buffer zone, areas adjacent to the protection zone which can be used for touristic and / or recreational purposes (up to one - third of total land); and
- Settlement zone, areas where settlement may take place if the existence of such constructions improves the park's characteristics or, at least, do not destroy them (Gümüř et al. 2010).

In Turkey, although a draft National Parks Law was prepared in 1974, it was not accepted because of the concerned ministries' opposition. It wasn't to take effect until 1983, due to lack of political cooperation and the 1980 coup. In accordance with Article 63 (on the conservation of historical, cultural and natural assets) of the 1982 Constitution, the National Parks Law was accepted on 9 August 1983 and published in the 11 / 08 / 1983 dated and 18132 numbered Official Gazette. Afterwards, a new National Parks Directive published in 1986 (Koptu, 2019).

The official regulation on national parks was first published in the Official Gazette on 12 December 1986 and the regulation was revised on 18 March 2014. According to the regulation, the necessities of the places to be allocated as national park are listed below.

- Natural and cultural resource value and recreational potential should be important and special at national and international level.
- Resource values should be important to the extent that future generations will inherit and be proud to have.
- Resource values must be undamaged or can be ameliorated by technical and administrative interventions.
- The site size should be at least 1000 hectares and this area should consist entirely of protection zones.

Also, according to the related regulation, the national park long-term development plans are prepared with the positive opinions of the relevant ministries, and when necessary with the actual contributions, and approved and put into effect by the ministry (National Parks Regulations, 2019).

The Primary objective of national parks are being defined as to protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation by IUCN and their other objectives are listed as below (IUCN, 2019);

- To manage the area in order to perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources and unimpaired natural processes;
- To maintain viable and ecologically functional populations and assemblages of native species at densities sufficient to conserve ecosystem integrity and resilience in the long term;
- To contribute in particular to the conservation of wide - ranging species, regional ecological processes and migration routes;
- To manage visitor, use for inspirational, educational, cultural and recreational purposes at a level which will not cause significant biological or ecological degradation to the natural resources;
- To take into account the needs of indigenous people and local communities, including subsistence resource use, in so far as these will not adversely affect the primary management objective;
- To contribute to local economies through tourism.

Today, there are 516 protected areas in different states and 44 national parks in Turkey (General Directorate of Nature Protection and National Parks, 2019). One of the most important national park in Turkey is the “Dilek Peninsula - Great Meander Delta National Park”. This study aims to examine the National Park’s natural and cultural resource values, flora and fauna existence, recreational possibilities and in these contexts to reveal the features of the park.

EXPERIMENTAL

Dilek Peninsula - Great Meander Delta National Park, which is the study area of this research, is located in the province of Aydın in the Aegean Region of Turkey.

The National Park, which has a total area of 27,598 hectares, is located in the boundaries of Kuşadası, Söke and Didim districts (Kuşadası District Governorship, 2019).

The National Park area consists of two parts. The first part belongs to the Dilek Peninsula, which was declared as a national park in 1966 and

has a surface area of 10,908 hectares. The second part consists of the Great Meander Delta adjacent to the south of the peninsula. Great Meander Delta was included in the National Park in 1994 and has 16,690 hectares surface area. The Dilek Peninsula Great Meander Delta has great importance not only nationally but also internationally (Kuşadası District Governorship, 2019; Bekdemir and Sezer, 2009) and due to this fact that it is protected by the International Ramsar, Bern and Rio Conventions and Barcelona Convention (Kuşadası District Governorship, 2019).

The Dilek Peninsula; as having the best examples of maquis flora in Turkey is also hosting the species of Black Sea flora on its northern slopes. The Delta is one of the most important habitats for migratory birds in the Aegean Region. It is also an egg - laying area for marine fish. In summer, the peninsula becomes a center where local people benefit from the sea (General Directorate of Nature Protection and National Parks, 2019).

The research method was mainly carried out in three stages:

In the first phase which is called as Conceptual Framework; previous scientific studies were examined within the scope of the research subject and general information has been provided about the concept of national parks and protected areas and also the context and amount of the national parks in Turkey.

In the second phase of the study, which is the “Data Collection” phase; Dilek Peninsula - Meander Delta National Park, which is determined as a research area, has been examined under three main headings. These headings are specified to include the following information;

Natural and Cultural Resource Values

- Geological and geomorphological structure
- Ecosystem diversity
- Historical and archaeological features

Flora and Fauna Wealth

- Flora wealth
- Fauna wealth

Recreational Facilities

- Active and passive recreational facilities
- Important sub - spaces in the park

Also according to the data gained by previous researches and observation studies, a SWOT analysis for the study area was done.

In the “Conclusion” section, which is the third and the last stage of the study, the importance of protected areas and national parks in the context of Dilek Peninsula Büyük Menderes Delta National Park was mentioned and various suggestions were made for transferring the park to the next generations on the basis of protection - use relationship.

RESULTS AND DISCUSSION

GENERAL CHARACTERISTICS OF THE AREA

Natural and Cultural Resource Values

Geological and Geomorphological Structure

The National Park consists of two different geographical formations: Dilek Peninsula and Great Meander Delta (Bingöl, 2011). Dilek Peninsula is extending an average of 20 km. of Samsun Mountain from the coast towards the Aegean Sea (Doga, 2019). There are many hills, canyons and coves within the morphological structure of this part (Bekdemir and Sezer, 2009). Due to its steep mountainous structure, it has the best - preserved specimens of Mediterranean vegetation.

Although the coastal structure is generally rocky, there are several pebbly beaches throughout the peninsula (Doga, 2019). The other part of the National Park consists of the coastal area of the Great Meander Delta, which includes marshes, lagoons, coastal arrows and cords, broken meander shapes and small ponds (Bekdemir and Sezer, 2009).

Great Meander Delta is home to different formations such as the sea, freshwater and mountains due to its geological evolution. The variety of climatic conditions of the watershed brings with its rich biodiversity and provides the possibility of life for restricted and endemic species (Büke et al. -).

Ecosystem Diversity

Distinguishing the National Park with its natural and cultural resource values and creating the main source of its richness there are 9 main ecosystems namely marine areas, lagoons, salty lands, fresh and brackish waters, fields areas and olive groves, maquis, forests, village settlements and hill groups (Figure 1).

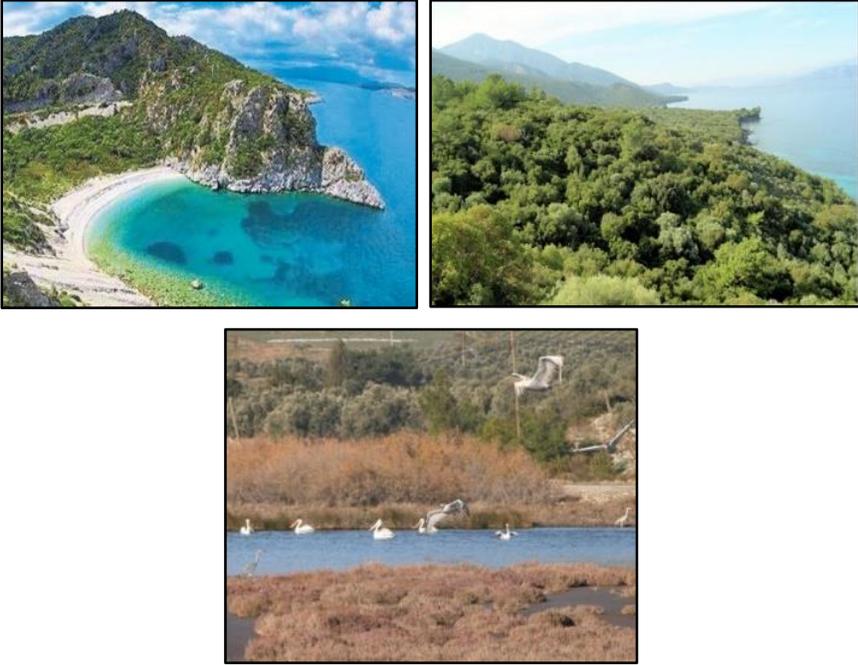


Figure 1: Ecosystem diversity (URL 1, URL 2, URL 3).

- Marine areas: The National Park is surrounded by marine areas and consists of the sea, coasts, coastal dunes and coastal rocks. The dunes in the National Park are important breeding areas for waterfowl. Close to the coastal dunes, there are also about 50 fishing shelters built of reeds and wood (Deniz et al. 2018).
- Lagoons: It covers all lagoons of various sizes in the Meander Delta. Shallow water lagoons, which are constantly expanding, are an important part of the delta system with their water mechanisms and unstructured natural characteristics depending on the water level that changes according to the seasons (Göktuğ, 2011). There are many lagoons in the Great Meander Delta. The most important of these; the lagoon lakes such as Karine lake (Dil lake), Arapça Dalyan, Tuzla Lake, Mavi Lake, Kokar Lake, Koca Lake and Bölme Lake. These lagoon lakes were formed as a result of the accumulation of alluvial deposits brought by the Great Meander River and the coastal arrows and cords formed by waves blocking the sea (Bingöl, 2011).
- Salty lands: It covers the areas between the lagoons in the delta and the agricultural areas. In these areas, which have been under fresh water for a long period as a result of periodic floods, the effect of salt water starts to show itself after flood. The absence of floods nowadays increases the saline

character of these areas and makes it possible to grow only saline plants (Deniz et al. 2018).

- *Fresh and brackish waters:* It covers the tributaries of the Old Meander River, drainage channels, temporary freshwater ponds, freshwater reeds, brackish springs and reeds and marshes. Although the most important determinant element of the wetland system is the Great Meander River, many fresh and brackish resources originating from the foot of the Samsun Mountains constitute a natural habitat in the system. In dry years, these resources have been very effective in maintaining the sustainability of the ecosystem. In addition, temporary streams formed by precipitation are very important for water storage of wetlands. Freshwater reeds are the rare habitat species in the region (Göktuğ, 2011).
- *Fields and olive groves:* The fields are widespread in the delta area formed by the desalination of old saline soils north and south of the main drainage channel. The coastal salty vegetation has been destroyed and cotton is generally cultivated in these fields. The olive groves are spread around the settlement of the New Doğanbey Village (Bingöl, 2011).
- *Maquis:* The National Park area hosts the healthiest specimens of all plant species belonging to the Mediterranean maquis flora, and where the soil and climatic conditions are suitable, *Quercus ilex*, *Santalum album* and *Arbutus unedo* in the maquis formation are found to be 10 meters long (Bingöl, 2011).
- *Forests:* It consists of *Pinus brutia* and quercus communities mixed with maquis, *Pinus nigra* communities, and rocky slopes spreading over 1000 meters. *Pinus brutia* and mixed forest texture have been exposed to fire from time to time, but renewed itself over time (Göktuğ, 2011).
- *Village settlement:* This village, formerly called Domatia, is an ancient Greek settlement. This village, which features Greek and Turkish architecture, is like an open air museum. For this reason, the urban protected area was declared and taken under protection. The Turks, who came to the Old Doğanbey Village in 1924 by population exchange, were settled, but they moved to the place of the new Doğanbey Village in 1985 due to limited infrastructure and expansion opportunities. Many buildings here have been devastated and destroyed. Today, those who came from outside the settlement started to restore the ruined buildings they purchased. Although not all have been restored to their original, the resulting outdoor spaces reflect the old characteristic texture (Dilek Peninsula Great Meander Delta National Park, 2019).
- *Hill Groups:* Karakol Hill (Lade), which was once an island, is a chain of hills on the land plain which is now surrounded by alluvial deposits. Vegetation is reduced due to fire and overgrazing. Fire prevented

regeneration of heaths, and also eliminated many species with poor regeneration ability. Grazing caused the emergence of *Gundelia tournefortii* in the area. The ground is stony due to severe erosion on the slopes (Göktuğ, 2011).

Historical and Archaeological Features

In the National Park which is 1st degree archaeological site, there is Panionion the holy gathering center of 12 Ionian cities in BC 9th century, Thebai (Thebes) Ancient City, Ayayorgi Monastery, Hagios Antonios Monastery and Zeus Cave (Başar, 2007). Dilek Hill (Mykale) and Lade Island (Karakol Hill) are among its other historical and archaeological values (Bekdemir, 2010). In addition, the Old Doğanbey Village, which is an old Greek village, and Karina, where customs houses are located, are under protection as an urban protected area (Göktuğ, 2011) (Figure 2).



Figure 2: Historical and archaeological features (URL 4, URL 5, URL 6).

Flora and Fauna Wealth

Flora Wealth

Dilek Peninsula - Great Meander Delta National Park is one of the richest national parks in Turkey in terms of natural vegetation cover.

The natural vegetation of the park can vary greatly even in short distances depending on the soil, water retention capacity, plant nutrient elements content, altitude and the view and shows a high diversity on the areas where the conditions are favourable. The fact that the research area has a highly variable topographic structure, and includes many ecosystems and geographical structures plays an important role in the diversity of vegetation (Göktuğ, 2011). The National Park has a speciality as a natural museum where the plant species existing all over Anatolia from the Mediterranean to the Black Sea are naturally seen together (Sürücü, 2019). The climatic asymmetry on the southern and northern slopes of the Dilek Peninsula, the variation of the climatic characteristics at a short distance due to the geomorphological structure and the fact that the natural vegetation has been protected from being destroyed due to its long-term national park status are the most important reasons for this vegetation wealth (Başar, 2007). Because of this unique biodiversity, the Dilek Peninsula has been recognized by the European Council as the “Biogenetic Reserve” which is an international conservation area for the protection of species or communities that are extinct or whose genetic diversity is diminishing in terms of vegetation. The rich variety of plants of the National Park can be seen more closely by visitors who are interested in botanical tours (Sürücü, 2019).

Within the borders of the National Park; 804 taxa were determined at the level of species, subspecies and variety belonging to 95 families. Elemental content of taxa are Mediterranean Element 163, Eastern Mediterranean Element 159, Euro-Siberian Element 33, Iran-Turanian Element 12 and Endemic Species 30 (General Directorate of Nature Protection and National Parks, 2019). Six of these plants are seen only here in the world. It also includes the 30 plant species found only in Turkey in the world. The liveliest and healthy examples of almost all plant species of Mediterranean maquis flora are located on the peninsula (Sürücü, 2019).

The forest - coastal ecosystem of the park consists of Mediterranean maquis flora dominated by plants such as *Pinus brutia*, *Arbutus andrachne*, *Arbutus unedo*, *Pinus nigra*, *Platanus sp.*, *Quercus sp.* are dominant on the forest-mountain ecosystem of it (Başar, 2007). In the valleys and canyons of Dilek Peninsula, the vegetation is dominated by species such as *Tilia rubra caucasica*, *Tilia argentea*, *Acer sempervirens*, *Sorbus torminalis*, *Castanea sativa*, *Populus tremula*, *Fraxinus ornus*, *Viburnum lantana* and *Quercus cerris*. Furthermore, the *Quercus ilex*, which is although showing a wide distribution in the western Mediterranean, showing a local and limited distribution in Turkey, shows a dense spread in the National Park. This species spread in the valley, canyon and bottomlands, coexists with the species as *Ceratonia siliqua*, *Olea europea*, *Laurus nobilis*, *Arbutus*

andrachne, *Spartium junceum*, *Phillyrea latifolia*. Also, the species as *Cupressus sempervirens* and *Juniperus phoenicea* which have a very limited distribution in Turkey, exist in this region. Another speciality of the Dilek Peninsula is that many maquis species have become trees due to protection. *Campanula tomentosa*, *Silene splendens*, *Verbascum meandri*, *Malope anatolica*, *Helsichhyrsum heywoodium*, *Centaurea acicularis* spp. *davisiana* are the endemic plants in the park (Özel, 1996).

Fauna Wealth

The fauna of the Dilek Peninsula - Great Meander Delta National Park is as rich as its flora and contains many animal species from insects to mammals. There are 28 mammals, 48 reptiles, 250 bird species and many marine animals in the National Park (Başar, 2007).

The Mediterranean Monk Seal (*Monachus monachus*), one of the world's 10 rarest marine mammals, also lives on the shores of the National Park. Wild boar (*Sus scrofa*), Caracal cat (*Caracal caracal*), Eurasian lynx (*Lynx lynx*), golden jackal (*Canis aureus*), striped hyena (*Hyaena hyaena*), wild cattle and horses and many animal species are the animals found in the park. The National Park is the last point where the Anatolian leopard (*Panthera pardus tulliana*), which is extinct or about to be extinct, lives in the west (Sürücü, 2019).

Dilek Peninsula - Great Meander Delta National Park has about 250 bird species and 70 of them breed here. The pygmy cormorant (*Microcarbo pygmaeus*) which is the threatened species in world scale, the Dalmatian pelican (*Pelecanus crispus*) which has a total estimated number of 3.000 couples all over the world, the little egret (*Egretta garzetta*), the Kentish plover (*Charadrius alexandrinus*) and the white - tailed sea - eagle (*Haliaeetus albicilla*) are some of the important bird species which breed in the delta. Because of its location, which is on the migration routes of the migratory birds, the delta hosts about 30.000 birds each year. The marine ecosystem around the Dilek Peninsula includes many fish species and a small number of other marine organisms. The main fish species found in the National Park shore are determined as; *Sparus aurata* (Gilthead seabream), *Moronidae* sp. (perch), *Trachurus trachurus* (Atlantic horse mackerel), *Epinephelus guaza* (orfoz) ve *Psetta maxima* (turbot). Due to its biodiversity, the National Park is protected with the Ramsar, the Bern (Convention on the Conservation of European Wildlife and Natural Habitats) and the Barcelona Convention (The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, originally the Convention for Protection of the Mediterranean Sea against Pollution) and the Convention on Biological Diversity (Aydın Governorship, 2019) (Figure 3).



Figure 3: Flora and fauna (URL 7, URL 8, URL 9).

Recreational Facilities

Active and Passive Recreational Facilities

Access to the Dilek Peninsula section of the National Park can be done from a single point through Kuşadası and the entrances and exits are under control at this point. There is a motorway from this entrance gate to Kavaklıburun Bay and it is open to visitors. From the Kavaklıburun Bay to the north, the western part of the Dilek Peninsula is closed to visitors for security reasons and no recreational activities are allowed in this area. There is no roadway for the connection of Dilek Peninsula to Great Meander Delta and access to this site is provided through the Oluklu Canyon trekking route (Öztürk and Kalaycı, 2018). Due to its close location to an important tourism area such as Kuşadası and ease of transportation, the area is heavily influenced by visitors especially in summer months (Cevreonline, 2019).

Around 700,000 local and foreign guests visit the Dilek Peninsula - Great Meander Delta National Park annually. Visitors can do daily sea sports in organized areas as well as hiking, cycling, photo safari, landscape watching, angling, cultural walks, bird watching, botanical tour activities etc. within the framework of eco-tourism rules (Kuşadası District Governorship, 2019). It is seen that the area can allow many ecotourism

activities. Natural formations such as caves, hills and potholes; it has the potential to satisfy local and foreign tourists with features such as having various wildlife elements and different ecosystems together (Öztürk and Kalaycı, 2018).

Important Sub - Spaces in The Park

Botanic tours are organized on the 2 km. course between Kavaklıburun - Karasu Bays and nature walks and botanic tours are organized between Canyon - the Old Doğanbey Village (General Directorate of Nature Protection and National Parks, 2019).

The National Park is an area suitable for hiking with its waterfalls, streams, pools, unique vegetation and wonderful views. There is a map of the Dilek Peninsula - Great Meander National Park that shows bike routes, trekking and botanical tour routes and lengths. According to this map data, there are two hiking trails in the area. The starting point of both of these trails is Olukdere Canyon and the endpoint is the Publicity and Visitor Center in the Old Doğanbey Village. Between these two points, there are two alternative routes of 16.4 km. and 17.8 km. On the way, there is the possibility of encountering different wild animals (especially wild boar). Another alternative course is a 30 km. long trekking line from Panionion to Old Doğanbey Village, which is home to several antique buildings, close to the entrance of the National Park, which can also be used with bicycles. An alternative course is a long course, starting from the Oluklu Canyon and the distance from the Patrol Pass to Panionion is 37 km. There are trails for cycling in the area. These are Aydınlık Bay route that is 5 km. long and Samos Island route that is 1.5 km. long are suitable for cycling tours. Also in the field; there are long-distances cycling trails of 30 km. between Panionion – the Old Doğanbey Village, 15 km. between Oluklu Canyon - the Old Doğanbey Village and 37 km. between Oluklu Canyon - Karakol Gedigi - Panionion (Öztürk and Kalaycı, 2018).

In the Great Meander Delta, sporting angling and bird watching can be performed on the evacuation channel and Great Meander river. Cultural tours can be done to the Panionion, Zeus Cave, the Old Doğanbey Village, the Old Winery location, Thebai (Thebes) Ancient City that are within the borders of the National Park. Also, ancient cities of Priene and Miletus are located near the National Park and important among these cultural tours (General Directorate of Nature Protection and National Parks, 2019).

The National Park is preferred by domestic / foreign tourists for photo safari for its unique resource values and landscape quality such as Dilek Hill, Olukdere Canyon, existing bays etc.

There are many bird species within the boundaries of the area and some of them breed in here. The National Park, which has the status of

Special Bird Areas (IBA) with this feature, allows *bird watching* including some endangered species. At certain times, these observations can be made as planned by the park's administration (Öztürk and Kalaycı, 2018).

There are natural and culturally formed areas in the National Park which are very suitable for *landscape track*. Samos Island, Great Meander Delta, Güzelçamlı and Davutlar beaches are easily watched from Dilek and other hills. Also, *paragliding* is possible in the National Park, since 2007 with the contribution of the Municipality of Güzelçamlı from the Kaplan Rock that is 950 m. high (Dilek Peninsula Great Meander Delta National Park, 2019).

Diving activities is possible in the parts of the National Park that are not planned as a recreational area but can be reached by footpaths. Also, *jeep* and *horse safari* recreational activities are organized in the area (General Directorate of Nature Protection and National Parks, 2019).

It is not possible to stay in a hotel in Dilek Peninsula and Great Meander Delta National Park. However, there are many holiday villages, hotels and pensions in Güzelçamlı, Davutlar, Kuşadası, Didim and Söke that are adjacent to the National Park (Cevreonline, 2019). On the other hand, it is possible to stay in caravan, tent or bungalows in some part of the National Park (Figure 4).

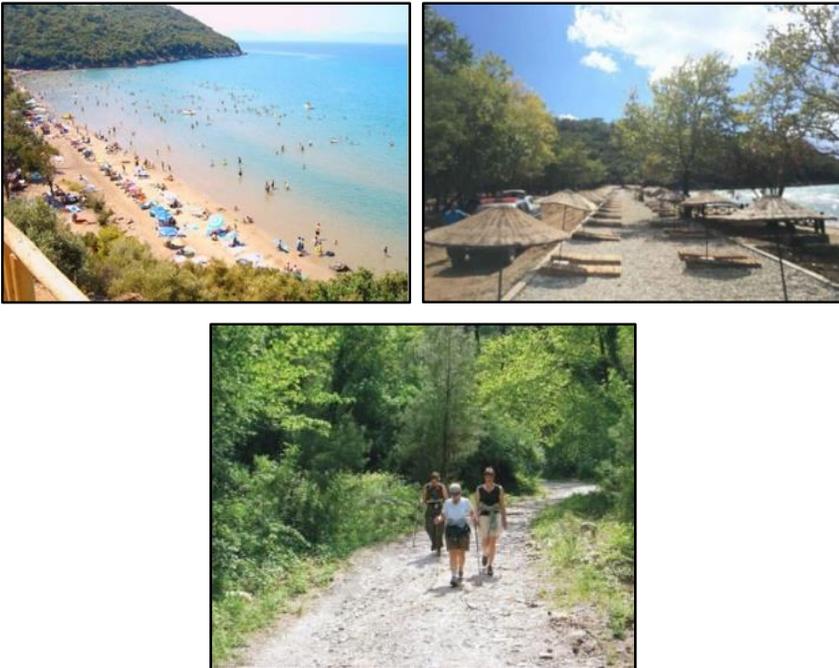


Figure 4: Recreational facilities (URL 11, URL 12, URL 13).

SWOT Analysis of the Research Area

The SWOT analysis of the study area is given in Table 1.

Table 1: SWOT analysis (Adapted from Aydın Governorship, 2019)

Strengths	Opportunities
<ul style="list-style-type: none"> ▪ Location of the area ▪ Being protected by many international conventions. ▪ Being one of the most famous parks in the world ▪ Flora and fauna wealth ▪ Presence of endemic species ▪ Having a potential in terms of nature tourism ▪ Low settlement pressure 	<ul style="list-style-type: none"> ▪ International recognition ▪ Having a revised long - term development plan ▪ Willingness of public institutions and NGOs to make investment on the area ▪ Being supported by ministries ▪ Having strong public awareness ▪ Being attractive for researchers and scientific studies
Weaknesses	Threats
<ul style="list-style-type: none"> ▪ Lack of fire action plan ▪ High demand over its carrying capacity ▪ Having an unplanned road network ▪ Pollution in the delta and its nearby 	<ul style="list-style-type: none"> ▪ Forest fires ▪ Presence of privately - owned lands ▪ Illegal cutting of trees ▪ High user expectancy over the area ▪ Disproportional demands for tourism investment

CONCLUSION

Dilek Peninsula Great Meander Delta National Park which is protected due to its unique natural, cultural, historical, archaeological and so on specialities and also which is planned as a recreation area offered to the benefit of public, has an increase in visitor density each passing day and with this situation some deteriorations come over on its natural and cultural resource values. However, the main purpose of registering an area as a national park is to transfer its unique resource values to future generations by considering the balance of protection and use. In addition to the problems experienced due to the intensive use, the problems such as; the forest fires and absence of fire action plans, pollution in the delta and its nearby, flora and fauna habitat fragmentation which is caused by the infrastructure works carried out without considering the natural dynamics of the area and the insufficiency of these implementations, illegal cutting of trees, presence of privately - owned lands in the research area etc. damage the National Park irreversibly. “The Dilek Peninsula - Great Meander Delta National Park Long -Term Development Plan” which was

prepared and put into force by the General Directorate of Nature Conservation and National Parks in 1997, has tried to balance the protection and use functions of the peninsula by considering the characteristics of the national park, and aimed to establish, develop and operate the peninsula. It has been determined that this plan does not meet the needs of today, and within this scope, preparations for a revised long-term development plan that will meet the current needs of the National Park in terms of legal, scientific and social aspects have been started. The revised plan is expected to be approved and put into effect in 2020.

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CHAPTER 10

**METHODS USED IN THE DESIGN OF NEW STRUCTURES
IN ARCHAEOLOGICAL SITES***

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INTRODUCTION

“Archaeological sites “comprise all vestiges of human existence and consist of places relating to all manifestations of human activity, abandoned structures, and remains of all kinds (including subterranean and underwater sites), together with all the portable cultural material associated with them.” (ICOMOS Charter For the Protection and Management of The Archaeological Heritage, 1990).

Commanding a crucial status in our cultural heritage, archaeological sites are remarkable heritage assets for embodying a rich array of values such as historic value, memorial value, artistic and technical value, group value, educational value, and documentary value (Madran and Özgönül, 2005: 61-74).

“Cultural and architectural heritage assets have largely broken free of the bounds of the passive conservation approach and taken notable strides toward co-existence with daily use. Archaeological heritage, on the other hand, still awaits being made use of – relegated to the status of an object of display severed from life within

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the confines of the passive conservation approach” (Büyükmihçi and Kaderli, 2016: abstract).

Archaeological heritage sites should be preserved and made a part of modern urban life as spaces shaping the urban memory and bringing meaning to the city like all the historic structures that are preserved as vital representatives of our cultural heritage (Büyükmihçi and Kaderli, 2016: abstract). It's essential that they be studied, turned to good account, and integrated with modern life for the sake of the ties present and future generations will establish with the past.

Regarding the preservation and presentation of archaeological heritage, the ICOMOS Charter for the Protection and Management of the Archaeological Heritage says:

“The overall objective of archaeological heritage management should be the preservation of monuments and sites in situ, including proper long-term conservation and curation of all related records and collections etc.” and *“The presentation of the archaeological heritage to the general public is an essential method of promoting an understanding of the origins and development of modern societies. At the same time, it is the most important means of promoting an understanding of the need for its protection.”* (ICOMOS Charter For the Protection and Management of The Archaeological Heritage, 1990).

A review of the existing examples shows that when designed in accordance with the conservation guidelines in the aforementioned charter, the structures in archaeological sites ensure both the conservation of the latter and their integration with modern life without being deprived of their context by means of right decisions about their design and function. In particular, the new structure designs that allow the presentation of archaeological sites to the general public prevent the finds from being impacted by environmental factors, make for a sustained medium for maintenance, and ensure the articulation of heritage items with the cultural memory by promoting an awareness of the archaeological heritage amongst the populace.

Every archaeological site has a different character as regards its location, purpose of construction, the communities that inhabited it, the cultural values it possessed, etc. Therefore, the new structure designs implemented in these sites take shape according to the data the site offers and the various methods the designer chooses (Büyükmihçi, Akşehirlioğlu, Uçar, 2019, 679). The multilayered composition of archaeological sites has a direct bearing on the broad choice of design decisions to be made. Thoroughly analyzing the finds and identifying the original and authentic

values of the existing fabric provide critical inputs to guide the designers in their selection of the path to take in designing a new structure.

This study included a research on the various methods used in designing new structures in archaeological sites. Data was gathered by going through the existing sources. The literature was reviewed first but sufficient data was not available to group and classify the methods. Consequently, examples from Turkey and the world were studied with the aim of contributing to the conceptual framework the absence of which was acutely felt in the literature. The findings revealed three main approaches to the new structure designs implemented in archaeological sites which were classified as construction on the archaeological site, underground construction on the archaeological site, and protective roof systems. A detailed reading was conducted on six examples – two from each of the three approaches. The data thus obtained were analyzed in the light of the numerous scientific essays on the subject and conservation guidelines before being reflected on the conclusion.

CONSTRUCTION ON THE ARCHAEOLOGICAL SITE

The method of construction on the archaeological site is one where the new structure is elevated on top of columns dispersed in such a way that the structure they support will neither obscure the archaeological site nor damage the finds. The ruins become part of the structure as objects of display. Bringing the visitors together with the archaeological heritage in comfort, this method has been studied via the examples of the New Acropolis Museum (Athens) and the Antakya Museum Hotel (Turkey).

The New Acropolis Museum

The New Acropolis Museum was designed by Bernard Tschumi on the Makryianni archaeological site southwest of the Athens Acropolis (URL 1; URL 2) (Figure 1). Two design competitions were held in 1976 and 1979 for the museum to be built on the site but none of the entries was found eligible. The winning project in the third competition in 1989 was never implemented because of the new finds discovered in the site (Erim, 1992: 29). The last competition for the museum structure took place in 2000 with Bernard Tschumi's project winning first prize. The museum built to this design was opened to visitors in 2007 (Öztürk and Yazıcı, 2017: 169). The governing design idea in the museum is to make the archaeological site visible. Rising on columns the placement of which was determined in consultation with experts, the structure enables the visitors to experience the archaeological site from walking platforms (URL 3; Akkurt, 2010: 30). The structure has been conceived in three parts its designers refer to as the base, the middle, and the top which are independent of, yet articulated with, each other. These parts are distinguished from one another by means of features such as exhibition

style, form, materials, exhibits, and position (URL 4). The connections between them are provided through gaps in the floor and the glass flooring used from the ground level up (Doğan 2018, 192), which ensures the continuity of the structure’s relationship with the archaeological site (Öztürk and Yazıcı, 2017: 171) (Figure 2). The uppermost floor of the structure, the top, is oriented directly toward the acropolis, offering a lookout point on the Parthenon, a noteworthy piece of cultural heritage (URL 5). This visual link with the Parthenon makes it virtually a part of the museum, offering the visitors a unique viewing experience (Çil and Güner, 2011: 92-93). The communication thus established is not restricted to the visual: the entire top floor, designed after the Parthenon layout, is dedicated to exhibits related to the Parthenon. These attributes of the top floor that highlight the structure justify Tschumi’s assertion, “*The museum features an architectural setup that enshrines the mathematical and conceptual clarity of Ancient Greece*” (Öztürk and Yazıcı, 2017: 170-171) (Figure 3, Figure 4). Modern glazing technology protecting the exhibits from excessive heat and light and admitting light to the interior in a controlled manner has been used in the glass surfaces enveloping the façades to provide unobstructed views of the acropolis and the archaeological site (URL 6). The museum’s effort to establish both visual and mental bonds between what already existed and what was created anew is commendable. It’s an example of successful design merging the interior with the exterior and the past with the present (Büyükmihçı, Akşehirlioğlu, Uçar, 2019, 680) (Figure 5).

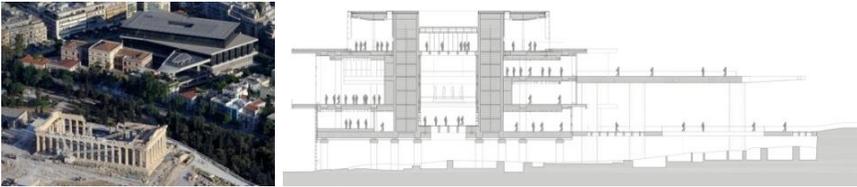


Figure 1. New Acropolis Museum and The Acropolis (URL 7), Figure 2. Cross Section (URL 4)



Figure 3. Top Floor Plan (URL 5), Figure 4. View of the Parthenon From the Top Floor (URL 4)



Figure 5: New Acropolis Museum Timeline (Büyükmihçı, Akşehirlioğlu, Uçar, 2019, 680).

Antakya Museum Hotel

Another successful example of construction on the archaeological site, the Antakya Museum Hotel was designed by Emre Arolat Architecture (URL 8). The structure is located in the Antakya city center not far from the Church of St. Peter, a major pilgrimage spot for the Christian world (URL 9; URL 10). The ruins of the ancient city of Antiochia scattered across 850 m², where the world's largest mosaic in one piece was discovered during the drilling excavations in the site, drastically altered the progress of a hotel project there (URL 11). Archaeological research was initially started in the area. Excavations yielded remnants of city walls possibly from the Hellenistic period as well as a bath complex and a glass workshop associated with five cultural layers and thirteen different civilizations (URL 12; URL 13). The design was overhauled in the light of the reports prepared on the basis of the data obtained during the excavation work (URL 14). Preserving the ruins and opening them to visitors as a public space inside the hotel project was adopted as the principal design decision (URL 15). The layer with the ruins, the one where the walking platforms are, was conceived as a museum. The base of the structure was raised above the ruins on composite pillars emplaced in 66 manually dug holes (Figure 6). An old river bed bisecting the site was key to the placement of the pillars. On the rooms floors, the rooms, each consisting of a shipping container-like unit, were connected to each other by means of bridges, allowing the archaeological site to be viewed from every floor (URL 14) (Figures 7-8). Spaces such as the ballroom, swimming pool, conference rooms, and restaurant which are to be found normally on the ground floor were placed on the top floor of the building. The top floor serves as a canopy sheltering all the layers below it and housing the shared outdoor areas accompanied by courtyards, a commonly encountered local feature (URL 8) (Figure 9). The fact that the project has been designed in a critically important setting avoiding any detrimental effect on the ruins and that care has been taken to maintain visual communication with the ruins on all floors is worthy of note as regards the

preservation and presentation of the archaeological site. Intended as a hotel at first, the project saw a great deal of debate on the private-versus-public dichotomy during its design phase. The in situ preservation of the archaeological site, its presentation to the public, and its integration with the hotel section were handled effectively based on the data collected from the site (Figure 10).



Figure 6. Pedestrian Platform (URL 8), Figure 7. Rooms Floor Plan (URL 8)



Figure 8. Container Rooms (URL 8), Figure 9. Perspective Cross Section (URL 8)

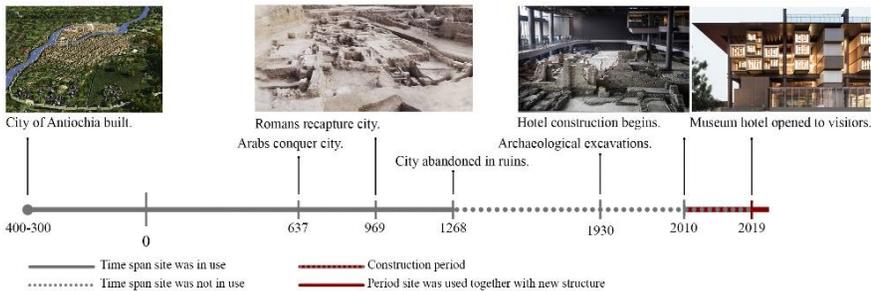


Figure 10. Antakya Museum Hotel Timeline (Büyükmihçı, Akşehirlioğlu, Uçar, 2019, 681).

UNDERGROUND CONSTRUCTION ON THE ARCHAEOLOGICAL SITE

In the method of underground construction on the archaeological site, a major portion of the new structure is designed to be underground in cases where the archaeological site lies below the natural ground level. The ruins are included in the structure with an in situ display system. This method that collocates the finds and the new structure on the same

elevation has been studied through the examples of the Pavlov Archaeopark (Prague) and the Daroca Visitor Center (Spain).

Pavlov Archaeopark

Designed by Radko Kvet Architectural Office, the Pavlov Archaeopark is in Prague's Pavlov Village, an important archaeological site where archaeological excavations are still in progress (URL 16). It was decided to build the project underground since building ordinances forbade construction, with the exception of in situ displays, in the planned location of the museum which fell inside a landscape conservation zone (URL 17). A major portion of the structure is underground while the rest is on the surface (URL 18; Pasin and Varinlioğlu, 2018: 177) (Figures 11-12). Limestone outcrops jutting out of green meadows inspired the design of the upper sections channeling light into the building (URL 19; URL 20) (Figure 13). The archaeopark showcasing relics from the Paleolithic Period was designed in the form of dimly lit chambers harking back to the cave dwellings of that age (URL 21) (Figure 14). Traditional museological display methods were used alongside modern audio-visual technology in the archaeopark's exhibition spaces (URL 22). Serving also to keep the public abreast of the significant finds discovered through the ongoing scientific efforts, the structure is imbued with a character symbolizing the local excavations. The modern silhouette of the above-ground structure has been married up successfully with the underground finds bearing signs from the past (Büyükmihçı, Akşehirlioğlu, Uçar, 2019, 682) (Figure 15).



Figure 11. Pavlov Archaeopark (URL 16), Figure 12. Plan (URL 19)



Figure 13. Cross Section (URL 19), Figure 14. Interior (URL 22)

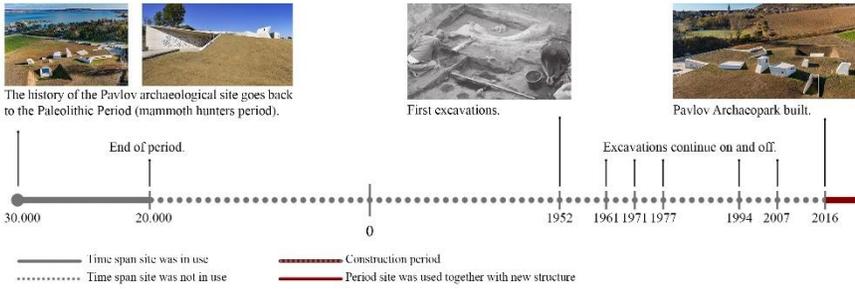


Figure 15. Pavlov Archaeopark Timeline (Büyükmişçi, Akşehirlioğlu, Uçar, 2019, 681).

Daroca Visitor Center

The design of the Daroca Visitor Center uses the method of underground construction on the archaeological site like the Pavlov Archaeopark. The structure designed by the Spanish architectural office Sebastian Arquitectos is located in the center of the town of Daroca in Spain (URL 23). Built over ruins holding layers of construction from Celtic, Islamic, Christian, and Roman cultures, the visitor center blends neatly with the urban texture (URL 24; Franco, Guillén and Ceamanos, 2016: 41) (Figure 16). A pedestrian platform stretching out from the street level and allowing the valuable archaeological remnants below it to be seen from the street, as well, forms the outer shell of the structure (URL 23) (Figure 17). The entrance level of the structure as well as the first and second floors house spaces such as a lecture hall, a small museum, and conference rooms while the underground section is allocated to the archaeological relics on display. The construction materials of steel, wood, reinforced concrete, and glass are combined seamlessly with the ruins and with each other. The glass facade facing the street lets daylight into the structure which stands as one with the street with the better part of it under the ground (URL 25) (Figures 18-19). The Daroca Visitor Center sports an original and meritable design that evokes powerful references to its context while preserving the ruins in situ and making them a part of the communal environment (Figure 20)



Figure 16. Street Façade (URL 23), Figure 17. Roof Surface (URL 23)



Figure 18: Interior (URL 23), Figure 19: Cross Section (URL 23)

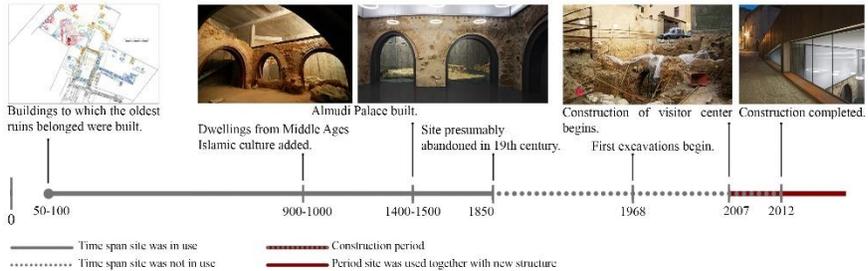


Figure 20. Daroca Visitor Center Timeline (Büyükmihçı, Akşehirlioğlu, Uçar, 2019, 681).

PROTECTIVE ROOF SYSTEMS

Protective roof systems are structures designed for temporary or permanent use for the purpose of protecting archaeological sites from the elements. Roof coverings that protect archaeological sites in situ and provide a controlled environment for the finds during the processes of exhibition, research or preservation consist of modern structural systems requiring very few supports across large spans. Protective roof systems have been studied through the examples of the Karatepe Aslantaş Open Air Museum (Turkey) and the El Molinete Archaeopark (Spain).

Karatepe Aslantaş Open Air Museum

The Karatepe Aslantaş Open Air Museum is located in a forested area in the Kızıyusflu Village in the Turkish province of Osmaniye (URL 26). Archaeological research on the still-standing gate of a border outpost from the Hittite era was carried out by Halet Çambel. The overhanging roof protecting the remnants was designed by Turgut Cansever (Çambel and Öcal, 1993) (Figures 21-22).

The fact that the remnants in the site were parts of a work of architecture necessitated the adoption of an in situ conservation approach rather than the thitherto applied customary method of moving the remnants to a museum for exhibition (URL 27). Standing out for its trailblazing design at a time when regulatory instruments had not been introduced into archaeology, and promoting in situ conservation which wasn't to find its

way into archaeological guidelines as a fundamental principle until later, the project stands as a distinct specimen demonstrating the practice of preserving and exhibiting archaeological objects in place without exposing them to the ravages of the environment and climate (URL 27).

A temporary roof was initially constructed at Karatepe Aslantaş (URL 28). A permanent roof was deemed to be necessary in the course of time. The first design was prepared by Franco Minissi, an architect from the Italian Restoration Institute, but wasn't implemented (URL 29). This design was eventually developed further by Turgut Cansever with a lightweight and simple overhang resulting in a protective roof which saw the first use of exposed concrete in Turkey (URL 30; Kortanoğlu, 2013: 53) (Figures 23-24). Karatepe Aslantaş brings a special identity to its location for being Turkey's first open air museum (URL 31). The remnants are restored and exhibited in their natural surroundings with an open air concept of museology, which is achieved through the use of a well-designed protective roof that is in harmony with the context, is compatible with the inputs offered by the archaeological site, does not distract attention from the exhibits, and is architecturally sound (Büyükmihçi, Akşehirlioğlu, Uçar, 2019, 684) (Figure 25).



Figure 21. Karatepe Aslantaş Open Air Museum (URL 30), Figure 22. Protective Roof (URL 30)



Image 23. Museum Entrance (URL 30), Image 24. Protective Roof (URL 30)

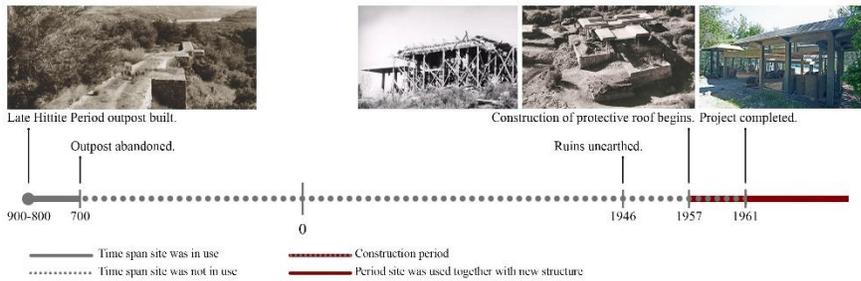


Figure 25. Karatepe Aslantaş Open Air Museum Timeline (Büyükmihçı, Akşehirlioğlu, Uçar, 2019, 681).

EL MOLINETE ARCHAEO PARK

The other example of protective roofs we studied is the El Molinete Archaeopark in Cartagena, Spain which was designed by Amann-Canovas-Mauri Architectural Office (URL 32). Conceived for the purpose of protecting the remains of a Roman forum dated to the 1st century AD and ensuring a unified perception of the entire archaeological site as one continuous entity by bringing all the remains together under a single canopy, the protective roof features long spans held in place with a small number of supports (URL 33; Tuna, 2016: 138-139) (Figure 26). The governing design criterion was to avoid any harm to the ruins by minimizing the number of supports that came in contact with them (URL 32) (Figure 27). Another criterion was to create a feeling of light weight and to let light in in a controlled manner (URL 34). This effect has been achieved by means of the modular, polyhedral, translucent, polycarbonate panel system used in the inner layer and the perforated steel plates giving a homogenous appearance to the outer layer (Figure 28). The pedestrian walkways placed at a certain height above the remains facilitate the perception and experiencing of the archaeological site by the visitors without risking harm to the archaeological finds (URL 35) (Figure 29). The modern design of the structure that contributes to the urban silhouette with a novel architectural style while respecting the character of the archaeological site is seen to fulfill its objective of protecting the historic remains while enabling a meld between the archaeological site and urban life (Figure 30)



Figure 26. El Molinete Archaeopark (URL 32), Figure 27. El Molinete Archaeopark (URL 32)



Figure 28. Protective Roof (URL 32), Figure 29. Walkway (URL 32)

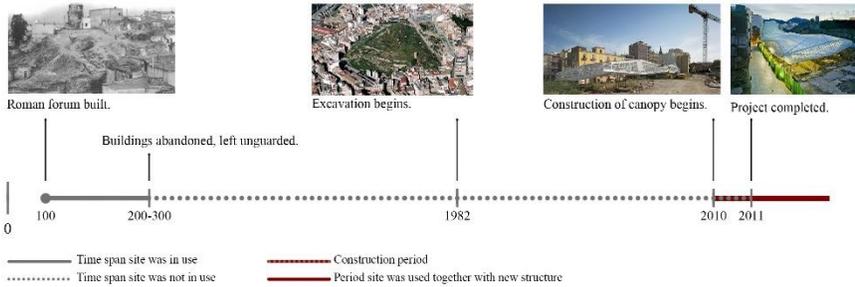


Figure 30. El Molinete Archaeopark Timeline (Büyükmihçı, Akşehirlioğlu, Uçar, 2019, 681).

CONCLUSION

The conservation of archaeological sites and their integration with modern life, which is one of the salient indicators of the depth of our cultural heritage, is highly valuable from the viewpoint of cultural continuity and urban memory. Technical endeavors such as excavation, surface survey, and anastylosis prove inadequate on their own for the protection and sustainability of archaeological sites, making it imperative to protect the finds from external effects and to unite them with the users. The new structure designs articulated with the historic identities and layers of the ruins for this purpose turn the archaeological sites into living cultural spaces and contribute to ensuring their continuity. Acquiring a new function through the new structures added to them, archaeological sites help build up awareness in their communities and refresh cultural memory as they reveal their ancient facts to their visitors in the comfort of modernity, shedding light on the deep recesses of the past.

The new structure designs implemented in archaeological sites were addressed in the present study as a novel topic that's open to research. Examples of the new structures in the archaeological sites in Turkey and the world were reviewed and used as a basis for a classification, yielding the three categories of *construction on the archaeological site*, *underground construction on the archaeological site*, and *protective roof*

systems. Positive examples from each category were published in order to help increase academic and public awareness.

The present essay researching and categorizing the new structures in archaeological sites was devoted to a reading of the works of those designers who managed to preserve the respective archaeological sites while also facilitating an insight into, and an interpretation of, the communities that left their cultural heritage in this geography on an architectural and urban scale by bringing that heritage together with a multitude of users.

While unfavorable specimens do exist, the examples studied merit praise for their design approach, the relationships they establish with the archaeological sites, and the way they touch the sites. In all of the examples addressed, the design took shape according to the inputs offered by the archaeological sites and the structures were constructed in such a way as to avoid any harm being done to them. Protecting the ruins from the elements, creating a comfortable setting for exhibition, and ensuring the inclusion of the archaeological sites in modern life was the common denominator in all three methods. The study shows that successful designs complying with the principles of conservation and respecting the archaeological sites are possible regardless of the methods used.

In summary, although the methods used in the design of new structures in archaeological sites differ depending on the contextual factors, they reflect significant commonalities from the perspective of design choices. Hence, it seems possible to generate a holistic discourse with a view to protecting archaeological sites and evaluating them in present-day life.

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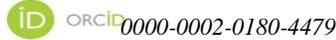
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CHAPTER 11

**USE IN THE BUILDING SECTOR OF LAMINATED WOOD
COMPOSITES PREPARED FROM WOODEN PALLETS
WITH COMPLETE SERVICE LIFE**

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INTRODUCTION

The increasing needs of the industrial society also increase the need for efficient transportation, stacking and preservation of products. Transport and stacking activities are among the key factors in the competition between companies in the globalizing world. Turkey and all over the world to reduce investment costs and issues such as storage, is extremely important for companies. The demand for systems and equipment used in the transportation and stacking of goods is increasing day by day in parallel with this. Pallet systems are one of the most commonly used systems for transporting and stacking goods.

Wooden pallets are used to prevent the products from being damaged during storage, to facilitate their transportation and to use wood, plastic, metal, etc. are elements made of materials. Its importance in the storage of products and transportation equipment sector is gradually increasing. The material used in the preparation of the pallets; It is important that it is environmentally friendly, economical, renewable, obtaining with minimum energy, and producing pallets that have completed their service life from materials to be recycled. Based on this importance, wood material is the most preferred material compared to other materials as the formation material of pallets.

Considering the relationship between ecology and materials, wood material is undoubtedly one of the leading materials that fully comply with ecological design criteria. Wood is the only building material that can

renew itself. Forests and individual trees are the only source that can continuously provide building material by growing and cutting (Topal, 2009).

The superiority of wood raw materials obtained from forest resources and the increase in usage areas with new technological developments puts pressure on the amount of wood raw material to be obtained from forest areas. For this reason, many traditional and technological alternative methods have been developed, such as using wood based boards instead of solid wood material, reusing wood material, utilizing waste and generating energy from wood waste.

The type and volume of waste generated during the production of forestry products may change over time depending on various factors (Top, 2005). Today, it is possible to collect the recycling and reuse options of wood based wastes in 4 main groups (Çolak, 2005; Demirkır, 2011). These are (1) reuse of wood waste, production of similar materials without damaging the structure of waste products; (2) direct recycling, reprocessing of waste for use as a wood product; (3) indirect recovery, utilization of the waste product in various places of use other than wood; (4) energy production is the use of wood-based waste as fuel for electricity or heat generation.

Waste wood is a potentially valuable resource for the manufacture of various materials and products (Lykidis, 2008). Efforts to be made to transfer resources to future generations without decreasing, on the contrary, by developing them, cover all processes from production to consumption of products. The continuity of the quality of life on earth is possible by reducing the negative effects of consumption on the ecological cycle. Considering and widespread use of nature-friendly usage patterns by businesses during the utilization of resources will be possible by establishing correct business processes both economically and ecologically. (Türkoğlu, 2011). For this reason, in today's world where natural resources are limited, utilizing the wastes of forest products businesses and bringing them into the economy as new products plays an important role.

The concept of recycling is the recycling of recyclable materials that are not used as raw materials through various recycling methods. First of all, the need for raw materials decreases as the consumed materials can be included in the recycling ring. Thus, the consumption that increases in parallel with the increase of the human population is prevented from disturbing the natural balance and the damage to nature. However, the use of recyclable materials as raw materials provides great energy savings. The reuse of aluminum saves up to 35% energy compared to aluminum being manufactured from scratch. Using waste materials as raw materials is also

important in terms of preventing environmental pollution. The use of used paper in re-paper production can reduce air pollution by 74-94%, water pollution by 35% and water use by 45%. The reasons such as the limited praise, the resource difficulties brought about by the world wars and the different needs have been effective in the emergence of the idea of recycling. Great states, II. During World War II, they launched nationwide recycling campaigns. Citizens are particularly encouraged to collect metal and fiber materials. The recycling process in the USA has an important place in the understanding of patriotism. Even, resource conservation programs created during the war continued after the war in some countries with limited natural resources (such as Japan).

In our country, non-governmental organizations such as Waste Paper and Recyclers Association (AGED), Environmental Protection and Packaging Waste Utilization Foundation (ÇEVKO), Clean World Ecology Association, Packaging Manufacturers Association, Consumer and Environment Education Foundation (TÜKÇEV), Plastic Manufacturers Association (PAGDER) and its organizations are working on recycling.

Artificial wooden materials are produced to increase the strength of the wooden materials to be used in the structure and to expand the use and limits. In particular, the development of technology provides the production of highly qualified artificial wood elements for the purpose of use today. In the production of artificial wood, In the production of artificial wood, wooden pallets that have completed their service life are also used in different areas. It is produced in wooden laminated materials as artificial wood obtained from wooden materials. Laminated wood is obtained by gluing and combining independent wood parts of different sizes under controlled industrial conditions and with special binders. Wood laminated material production stages are given in Figure 1.

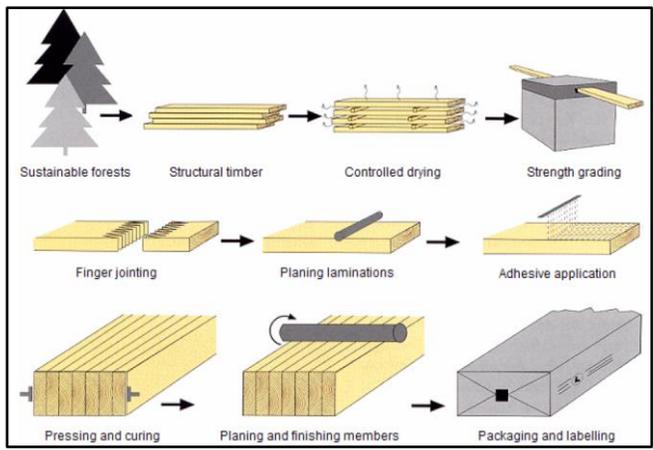


Figure 1. Wood Laminated Material Production Process

Laminated wood technology was first known by German carpenter Otto Hetzer, then used in Switzerland and Germany between 1901 and 1906; it spread to all of Europe between 1907 and 1930. It started to be used widely in civil buildings in a short time. Especially since 2000, its use has been increasing rapidly in Europe. Since 2006, the European Union has been promoting the use of wood as a remedy to global warming and climate change.

Laminated Wood materials can be used as carrier and intermediate element in the structure. Wood laminated materials can be used in Theater, concert halls, fairgrounds, sor facilities, swimming pools, covered tribune structures, bridges, hippodrome, ship parts, schools, mosques, shopping malls, large warehouse and hangar construction, factory buildings, doors, windows and roof materials. In addition, large and single span structures can be constructed such as educational structures. In Figure 2, the stadium built using wood laminated material is given.

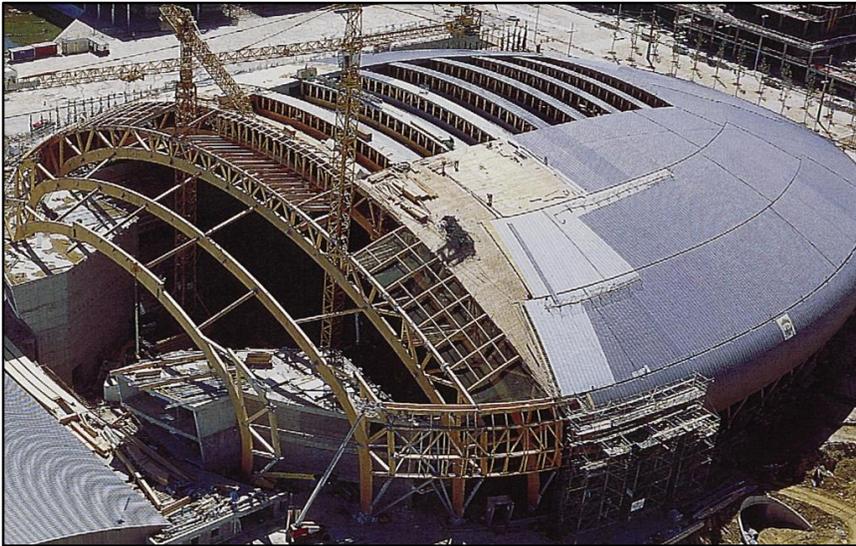


Figure 2. Use of Laminated Materials in the Building (Erengezin, 2000).

Today, where natural resources are limited, utilizing waste materials and bringing them into the economy as new products plays an important role. In this study, it is aimed to determine whether wooden pallets that have completed their service life can be laminated and used in the building industry.

MATERIAL AND METHOD

In the preparation of the test specimens, 800×1200 mm wooden pallets with completed service life were used (Fig. 1a). Wooden pallets in

the status of waste were disposed at the residential construction sites in the Banaz district of Usak province, no longer economic value.

Polyvinyl acetate (PVAc-D4) and polyurethane adhesives which are commonly used in the wood industry and box- type furniture manufacture, were used in this study. The single-component polyvinyl acetate (PVAc) adhesive Kronen Holzleim D4 manufactured by the German Kronen Company (Fenstertechnik Institut Rosenheim, Germany) was used in this study. The properties of this glue used were determined as press compression 0.1-0.8 N / mm², pH 3.5, viscosity (20°C) 16000-15000 mPas, density 1.08 g/cm³ and wood bonding time at 20°C for 35-40 minutes determined by the company. PVAc adhesive was supplied by Kronen Inc., in İzmir, Turkey (Kronen, 2019). Polyurethane (PU-D4; Egger Decor, Gebze, Kocaeli, Turkey) is a single component polyurethane-based adhesive. Fast curing, polyurethane based wood adhesive. Easy to apply, low viscosity and high bonding strength, water resistant, 15-20 min. press time and 5-10 min. the surface has a drying time and is a transparent adhesive (Romabant, 2019).

PREPARATION OF THE TEST SAMPLES

Massive materials of 23x 80x1200 mm were obtained from wooden pallets brought to the furniture and decoration workshop of Uşak University Banaz Vocational School (Fig. 3).

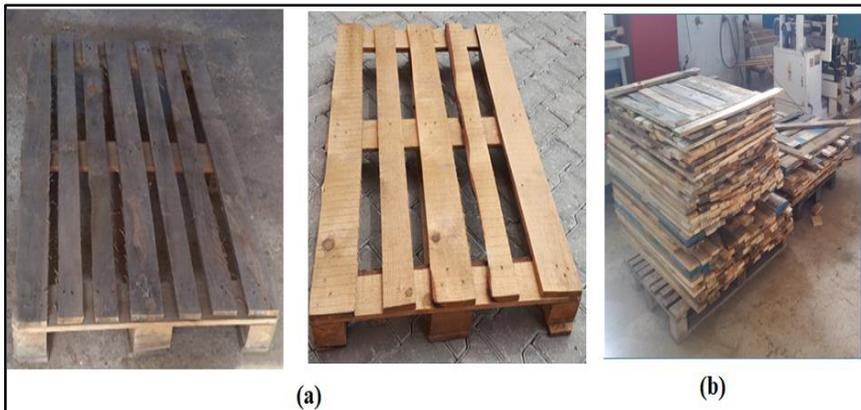


Figure 3: a: Wooden Pallets, b: Obtaining Massive Materials from Wooden Pallets.

10 x 70 x 1000 mm slats were acquired from red pien timbers. After being stacked, the slats were kept in an air-conditioned room of $20 \pm 2^\circ\text{C}$ temperatures and $65 \pm 5\%$ relative humidity conditions until they reached 12% humidity. The test samples were prepared in accordance with the TS 5497 EN 408 (2006). For the preparation of the sample's polyvinyl acetate (PVAc-D4) and polyurethane (PU-D4) were used. To produce the test

samples, the glue solution was applied to the solid bonding surfaces with a brush and 200 g/m^2 glue was used (Fig. 4). For the bonding process, the surfaces were glued and left to rest for 5-6 min (open time) and then pressed at 1.2 N/mm^2 for 8 hours (closed time). The laminated wood material obtained after the pressing process was prepared with a wood processing machines in accordance with the dimensions specified in the standard. Fig. 5 shows the prepared samples.



Figure 4: The Glue Solution Was Applied To The Solid Bonding Surfaces With A Brush.

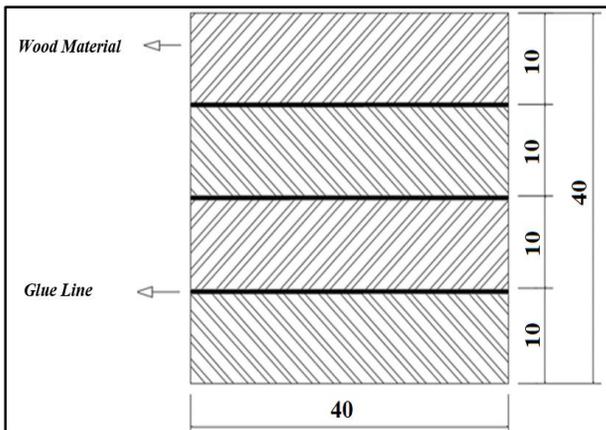


Figure 5: General Configuration of Laminated Wood Material (Dimension in mm).

By using, 2 glue types (PVAc-D4 and PU-D4), 2 load types (perpendicular to the glue line or parallel to glue line), 2 experiments types (bending strength and modulus of elasticity), a total of 80 samples ($2 \times 2 \times 2 \times 10$) were prepared 10 replicates for each parameter. Prior to testing, all specimens were stored in a conditioning room maintained at $20 \pm 2^\circ\text{C}$ and 65% RH until moisture equilibrium was achieved.

THE FOUR-POINT BENDING STRENGTH TEST

The universal test device with a capacity of 50 kN capacity universal testing machine Shimadzu test machine (in the laboratory of Safranbolu Vocational School at Karabuk University of Turkey) was applied to the prepared samples with static load parallel and perpendicular to the glue line. Static loading was determined with the four-point bending apparatus (Fig. 6).

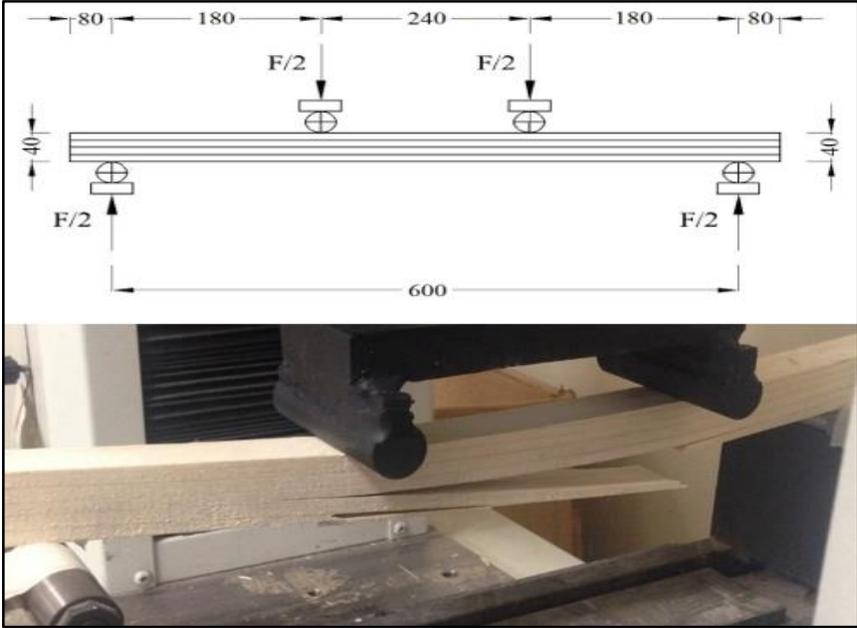


Figure 6: Configuration of A Four-Point Bending Strength Test (Dimension in mm).

In this study, the TS 5497 EN 408 (2006) was taken into consideration. The test machine had a loading speed of 5 mm/min. The four-point bending strength, modulus of elasticity in bending and load bearing capacity were determined for the samples placed in such a way that the fulcrum point span was 760 mm. The bending strength and modulus of elasticity were calculated according to the following equations:

$$\sigma_{E4} = \frac{F.L}{bh^2} \quad 1$$

$$E_{m.g4} = \frac{\lambda^3(F_2 - F_1)}{b_1 h_1^3 (W_2 - W_1)} \left[\left(\frac{3a}{4\lambda} \right) - \left(\frac{a}{\lambda} \right)^3 \right] \quad 2$$

Where;

σ_{E4} = 4-Point Bending Strength (N/mm²)

$E_{m.g4}$ = Modulus of elasticity in 4-point bending (N/mm²)

F = Maximum load

L = Distance between bearings (mm)

b = Piece width (mm)

h = Piece thickness (mm)

λ = Measured length for determination of elasticity modulus (mm)

b_1 = Sample width (cm) (Tangent measure)

h_1 = Sample height (cm) (Radial measure)

a = Distance between loading point and nearest bearing (mm)

$F_2 - F_1$ = Increase of the load ratio on the straight line of the load deflection curve (N).

where: F_{max} is the maximum force at the time of rupture (N), L is the span between supports (mm), b is the width of the specimens (mm), and d is the thickness of the specimens (mm), λ - measured length for determination of elasticity modulus (mm), b_1 - sample width (mm) (tangent measure), h_1 - sample height (mm) (radial measure), a - distance between loading point and nearest bearing (mm), $F_2 - F_1$ - increase of the load ratio on the straight line of the load deflection curve (N), Difference in deformation corresponding to $W_2 - W_1 = F_2 - F_1$ (mm).

EVALUATION OF THE DATA ANALYSIS

A computer-based statistical package, (Minitab, Minitab®18, State College, PA, USA) was used in the statistical analysis of the data obtained. The difference between the technological properties of laminated wood materials was determined by the T Test. Statistical results of the data obtained in the experiments (T Test, arithmetic mean, standard deviation, coefficient of variation%) were used. The difference between groups was determined at 95% confidence level in the t test (range).

RESULTS AND DISCUSION

Bending Strength

According to the normality analysis test result, the regions show normal distribution. Tab. 1 shows the physical properties of both the control samples and the red pine laminated wood materials, Tab. 2 shows the statistical evaluation of the bending strength results and Tab. 3 shows the results of variance analysis.

Table 1: Density of Material Types.

Material type	Mean (g/cm ³)
Wood sample	0.56
Wood sample + PVAc-D4 glue	1.01
Wood sample + PU-D4 glue	0.96

Table 2: Summary of Values Bending Strength Values of Laminated Wood Materials (N/mm²).

Adhesive Type	Glue Line Direction	\bar{X}	SD	%V
PVAc-D4	Parallel	58.52	10.10	1.019
	Perpendicular	56.91	13.30	1.769
PU-D4	Parallel	64.81	11.12	1.236
	Perpendicular	56.81	9.54	0.909

SD = Standard deviation, V = Coefficient of Variation, \bar{X} =Mean

Table 3: Results of Variance Analysis.

Source of variance	Adj SS.	DF	Adj MS	F	P
Adhesive Type (A)	95.961	1	95.961	0.778	0.384
Glue Line Direction (B)	230.472	1	230.472	1.868	0.180
A x B	102.256	1	102.256	0.829	0.369
Error	4441.44	36	123.373		
Total	145351.296	40			
Corrected Total	4870.13	39			

a. R Squared = .088 (Adjusted R Squared = .012).

According to the results of variance analysis, the effect of adhesive type, glue line direction and the double interaction of these two factors on the bending strength were found to be statistically insignificant for the probability of error ($p < 0.05$). Comparison of Bending Strength Values were given in Table 4.

Table 4: According to Glue Type, T Test for Comparison Of Bending Strength Values (N/mm²).

Adhesive Type	N	\bar{X}	SD	t	DF	p
PU-D4	20	60.81	10.89	-0.874	38	0.388
PVAc-D4	20	57.71	11.52			

According to the t test result for the comparison of the bending strength values of polyvinyl acetate (PVAc-D4) and polyurethane (PU-D4) adhesives, it is seen that the bending strength values of the adhesives are different from each other ($t_{0.05; 38} = 0.874$). It was determined that the flexural strength value (Mean = 60.81) of polyurethane (PU-D4) glue was higher than polyvinyl acetate (PVAc-D4) glue (Mean = 57.71). T Test For Comparison Of Bending Strength Values were given in Table 5.

Table 5: T Test for Comparison of Bending Strength Values Of Glue Line Direction (N/mm²).

Glue Line Direction	N	\bar{X}	SD	t	DF	p
Parallel	20	61.66	10.83	1.374	38	0.178
Perpendicular	20	56.86	11.27			

In terms of the direction of the glue line, it was determined that the bending resistance values were different from each other as a result of the t test performed to compare the bending resistance values ($t_{0.05; 38} = 0.804$). It is seen that the bending resistance parallel to the glue line (Mean = 61.66) is higher than the bending resistance perpendicular to the glue line (Mean = 56.86).

Modulus of Elasticity in The Bending

The statistical evaluation of the results on modulus of elasticity in bending of the laminated wood materials are given in Tab. 6 and the results of variance analysis are given in Tab.7 According to Tab. 6, when the modulus of elasticity in bending parallel to the glue line values are compared, it can be seen that the samples created using polyurethane glue and gave maximum value, while those that used polyvinyl acetate glue and gave minimum value. It was observed that the elasticity values in bending perpendicular to the glue line were similar in the direction of the samples created using polyurethane.

Table 6: Summary of Mean Modulus Of Elasticity In Bending Values Of Laminated Wood Materials (N/mm²).

Adhesive Type	Glue Line Direction	\bar{X}	SD	%V
PVAc-D4	Parallel	7473	348.41	1.019
	Perpendicular	7204	748.55	1.769
PU-D4	Parallel	7720	263.98	1.236
	Perpendicular	7629	178.04	0.909

SD = Standard deviation, V = Coefficient of Variation, \bar{X} =Mean

Table 7: Results of Variance Analysis.

Source of variance	Adj SS.	DF	Adj MS	F	P
Adhesive Type (A)	1126847.21	1	1126847	5.756	0.022
Glue Line Direction (B)	323296.762	1	323296	1.651	0.207
A x B	78492.246	1	78492	0.401	0.531
Error	7047220.50	36	195772		
Total	226271651	40	123.37		
Corrected Total	8576457.02	39			

a. R Squared = .178 (Adjusted R Squared = .110).

According to the results of variance analysis, the effect of adhesive type, glue line direction and the double interaction of these two factors on the modulus of elasticity in bending were found to be statistically insignificant for the probability of error ($p < 0.05$). T Test For Comparison Of Modulus Of Elasticity In Bending Values were given in Table 8.

Table 8: According to Glue Type, T Test For Comparison Of Modulus Of Elasticity In Bending Values (N/mm^2).

Adhesive Type	N	\bar{X}	SD	t	DF	p
PU-D4	20	7674	584.69	-2.379	38	0.022
PVAc-D4	20	7339	224.07			

When Table 8 is examined, it was determined that the modulus of elasticity values in bending of the wood laminated samples prepared using polyvinyl acetate (PVAc-D4) and polyurethane (PU-D4) adhesives are different from each other according to the t test result ($t_{0.05: 38} = -2.379$). Accordingly, polyurethane (PU-D4) glue (Mean = 7634) gave better results than polyvinyl acetate (PVAc-D4) glue (Mean = 7339). T Test for Comparison of Modulus of Elasticity in Bending of Glue Line Direction values were given in Table 9.

Table 9: T Test for Comparison of Modulus of Elasticity in Bending Of Glue Line Direction (N/mm^2).

Glue Line Direction	N	\bar{X}	SD	T	DF	p
Parallel	20	7596	326.45	1.220	38	0.230
Perpendicular	20	7416	572.54			

As a result of the t test performed to compare the modulus of elasticity values in bending values of the glue line direction, the modulus of elasticity values in bending were found to be different from each other ($t_{0.05: 38} = 0.230$). Accordingly, it was determined that the modulus of elasticity values in bending parallel to the glue line (Mean = 7596) is higher than the modulus of elasticity values in bending in the direction of the modulus of elasticity perpendicular to the glue line (Mean = 7416).

Fracture Types

It has been determined that the deformation of the test samples under the effect of the forces perpendicular to the glue line and the breakage of the test samples under the effect of the forces parallel to the glue line are different. While wide angle breaks occurred in samples perpendicular to the glue line, narrow angle breaks occurred in samples parallel to the glue line. In the samples perpendicular to the glue line, deformation occurs in the wood material in the lower and upper sections of the junction point of the breaking glue and the wood material. In the examples parallel to the glue line, it was formed by separating the wood material and the glue layer. Relevant pictures of the breaks that occur are given in Figure 7.



Figure 7: Fracture Types for Bending Test to Perpendicular to The Glue Line and Parallel to The Glue Line

CONCLUSION AND RECOMMENDATIONS

This study investigated, the modulus of elasticity in bending and 4-point bending of wood laminated material. Within this scope, Glues were placed between four layers of veneer prepared from red pine (*Pinus brutia*) wood, which is extensively used in the manufacturing of wood pallets and

building materials in Turkey, and polyvinyl acetate and polyurethane glues were used to glue the layers. The wood laminated samples were statistically evaluated according to glue type and load application type. In terms of glue type, the highest bending strength value parallel to the glue line and perpendicular to the glue line was obtained from the polyurethane glue, while the lowest bending strength value was obtained from the polyvinyl acetate. Additionally, the highest modulus of elasticity in bending value parallel to the glue line and perpendicular to the glue line was determined in the polyurethane glue and the lowest in the polyvinyl acetate glue.

According to the evaluations made in terms of glue type, it was determined that using polyurethane glue had an effect on increasing bending strength perpendicular to the glue line and parallel to the glue line. This could be explained by the fact that polyurethane glue has a stronger chemical bond between wood lamella than polyvinyl acetate glue. In spite of this, for the best results in terms of bending strength in applications parallel to the glue line and perpendicular to the glue line, it was determined that the laminated elements produced using polyurethane glue showed an increase in bending strength compared to the laminated elements.

In terms of glue line, the highest bending strength value was determined in the parallel to the glue line, the lowest in the perpendicular to the glue line. Additionally, the highest modulus of elasticity in bending value was determined in the parallel to the glue line, the lowest in the perpendicular to the glue line.

According to the place of use in the structure, the formation of equilibrium humidity between the humidity that the material has and the ambient humidity is important in terms of ensuring the material's dimensional stability. All the advantages of the study; the use of wooden pallets wooden elements obtained from equilibrium with its surroundings kararlik created to provide structure, use, end-of-life materials the use of environmental pollution, to reduce the load on Forest Products, architectural and industrial designer in the direction of producing the products in various forms is to provide the convenience of the manufacturer.

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