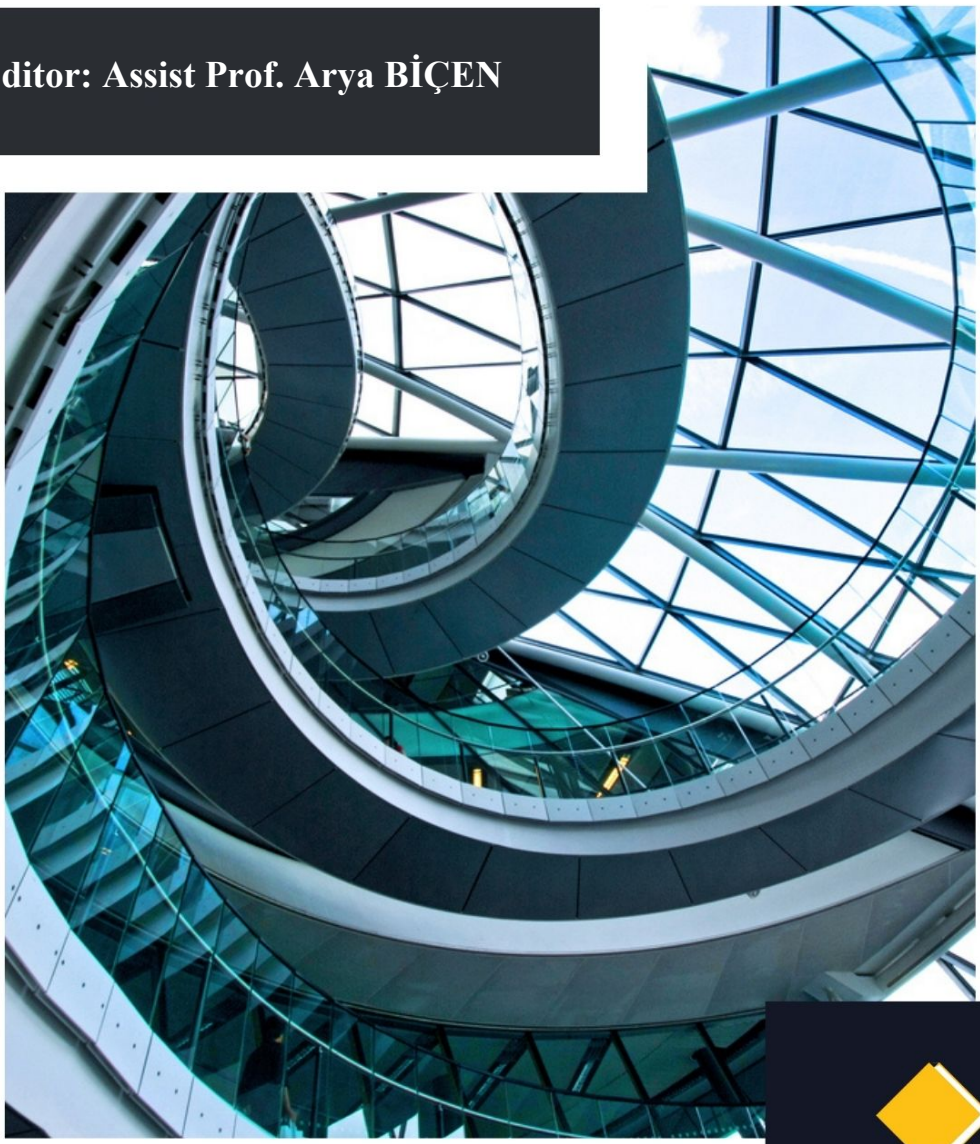
NEW FRONTIERS IN ARCHITECTURE, PLANNING AND DESIGN

Editor: Assist Prof. Arya BİÇEN



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EDITORS

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New Frontiers in Architecture, Planning and Design
Editor: Assist Prof. Arya BİÇEN

Editor in chief: Berkan Balpetek
Cover and Page Design: Duvar Design
Printing : October -2023
Publisher Certificate No: 49837
ISBN: 978-625-6585-17-1

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Chapter 1

"Recep Tayyip Erdoğan University Zihni Derin Campus Student Life Center And Surrounding Open Space Planting Design And Implementation"

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Introduction

Since its existence, human beings have tried to beautify the places they live in and make them more livable. With this understanding and approach, landscape architects aim to create more livable and comfortable spaces for people. University campuses are public buildings, and there are restrictive factors in design such as landscaping around public buildings, diversity of user groups, economic reasons, and demographic diversity. The ability of field studies to be perceived by users depends on the foresight of the designer(Turgut 2011).

Campuses, which are part of urban landscapes, not only change the city skyline but also impact urban life (Yıldız and Şener, 2006). The design of campus landscaping should include green spaces that provide opportunities for various activities such as dining, reading, chatting, sitting, listening to music, rehabilitation, and contact with nature, similar to a park, catering to users (academic and administrative staff, visitors, students). Additionally, it should have a different conceptual and spatial design due to the unique characteristics of a campus (Yılmaz, 2015).

Natural areas on university campuses are physical environments that have a positive impact on people's mental health (Lau et al., 2009). Similar research has defined landscapes that include natural elements as distinctly therapeutic spaces because they provide emotional relaxation for individuals (Kaplan and Talbot, 1983; Hartig et al., 1991; Kaplan, 1995; Yılmaz, 2015; Yılmaz et al., 2017). Therefore, the plant design of campus areas is as crucial as their structural design.

The goal of plant design is to contribute aesthetically and functionally to the space it occupies, addressing user needs (Robinson, 1992). Plants, as the most important components of open and green spaces, stand out with their living and dynamic nature, becoming indispensable elements of spaces with their changing forms according to seasons and years (Yeşil, 2017). Producing a satisfactory plant design does not depend only on the designer knowing the dendrological characteristics of the plant. In addition, the concepts of texture, form, line and color that constitute the visual characteristics of plants should also be taken into consideration. Although these elements are more abstract than the special effects of fruits and flowers, they are necessary to understand the whole composition. Creating functional and aesthetically appropriate outdoor spaces can be achieved by selecting, designing and conscious use of appropriate elements (Ayaşlıgil, 2004; Robinson, 2004, Kelkit, 2002).

In this study, Recep Tayyip Erdoğan University aims to transform its limited open green spaces into an exemplary campus that offers its users high-quality, livable, and attractive environments. Additionally, the goal is to integrate the university campus with the unique nature of Rize, contributing to the city's

aesthetics and identity. To achieve this purpose and goal, the analysis phase considered the needs of students, academic and administrative staff, and visitors who use the campus, as well as the spatial features that facilitate these needs. Thus, the process was carried out in stages of analysis, design, and implementation. During the analysis phase, spatial, functional, and natural landscape data were evaluated. The design phase prioritized user needs, and the design was completed using the aesthetic and functional features of plants. Finally, the design was implemented on the site.

Materials and Methods

The study area is the open space of the Student Life Center located in the Zihni Derin Campus of Recep Tayyip Erdoğan University in Fener Neighborhood, Rize Province. Due to its topographical features, this study area stands out as the sole location on the university campus where open-air events (festivals, entertainment, student club activities, etc.) can be held. Additionally, it serves as the largest area where students can spend their leisure time outside of class and functions as a central square within the university's campus (Figure 1).

Figure 1. Recep Tayyip Erdoğan University Zihni Derin Campus and Study Area

The landscaping project for the study area, where the hard surface application was carried out by the Directorate of Construction and Technical Affairs of Recep Tayyip Erdoğan University, was completed in 2015, and its implementation was carried out in 2016. The landscaping project was conducted in stages of analysis, design, and implementation.

Analysis

In this stage, the site plan obtained from the Directorate of Construction and Technical Affairs was used as the base for the plantation project. Information such as user needs, climate characteristics, soil structure, and natural vegetation cover was gathered for the landscaping project.

The total area of the campus is 98,026 square meters. The area occupied by buildings is 40,608.59 square meters, while open spaces including sidewalks, green areas, meeting areas, and roads cover 57,417 square meters (Google Earth Pro, HGM Küre, 2023). The study area is approximately 650 square meters.

In Rize, the months of July and August have the highest average temperatures, while January and February have the lowest. The annual average temperature in Rize is 14.1 degrees Celsius, with the highest temperature reaching 37.9 degrees Celsius and the lowest temperature dropping to -7.0 degrees Celsius. The months with the highest relative humidity are August, September, and October (URL-1).

Throughout the year, the prevailing wind direction in Rize is southwest. However, in May, the dominant wind direction shifts to northeast. The highest recorded rainfall in Rize occurs in November, with 251.1 mm of precipitation. The months with the highest average snowfall days are February and March (URL-1).

A significant portion of the study area consists of hard surfaces. The limited green areas in the study area are composed mainly of soil, with other soft surfaces containing soil to a depth of only 60-70 cm. The existing soil is primarily clayey excavation soil.

The hard surface project for the area is implemented gradually with stairs, resulting in fragmented and flat green areas.

The study area is located right in front of the main entrance of the campus (figure 2). The large square, reached by stairs, is entirely made up of hard surfaces, with outdoor seating steps resembling an open-air amphitheater in the southern part. Immediately above these steps, there is a movable water surface designated for planting, which starts as a curtain of flowing water from above and forms a circulation system consisting of four tiers of ponds. Wooden bridges provide passage over the water surface, which divides the area in two. Wooden seating units are located along the edges of the circulation paths within the area. The Recep Tayyip Erdoğan University emblem is placed on the high wall where the water flows.

Figure 2. General View of the Study Area

The area where the main landscaping project was carried out includes small seating areas created around this water surface. In the large square used for circulation, meeting, resting, and events, plantings have been placed in pots along the edges. Plantings have also been incorporated into wooden containers in these areas to soften the harsh appearance of the amphitheater-like wooden-clad steps and increase the green area. Soil areas created along the stairs leading from the square to the water surface have been included in the planting design to serve their function.

Taking into account the information obtained about the area, decisions regarding land use were made in line with landscaping design principles (Figure 3).

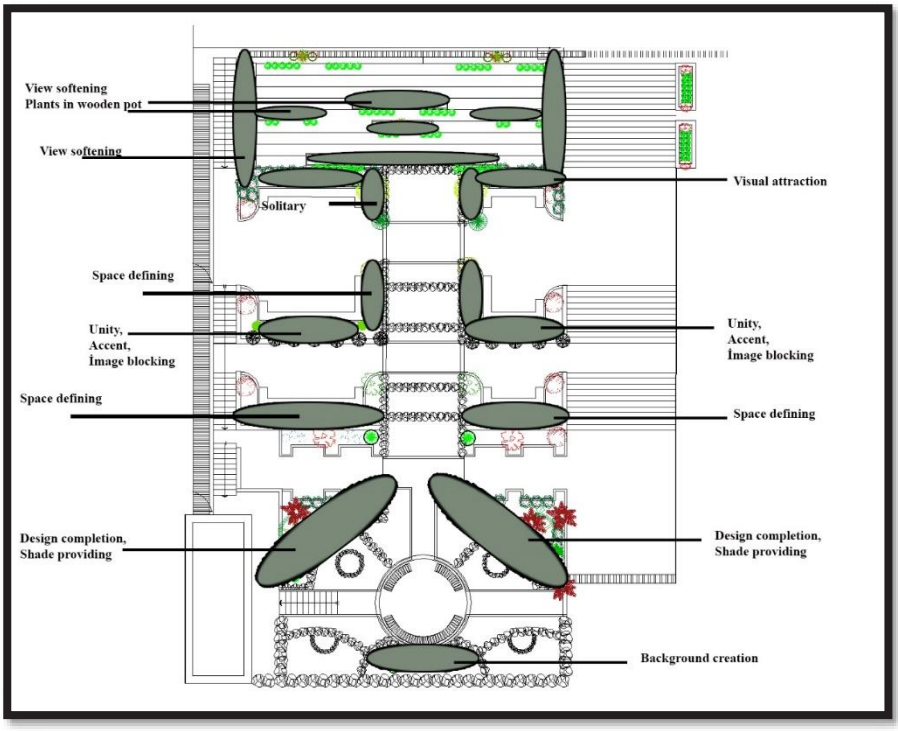

Figure 3. Land Use Decisions

When selecting the plant species as design material, soil and climatic characteristics were taken into consideration, and plant materials suitable for the ecological conditions of the city of Rize were preferred. Before, during, and after the implementation, photographs of the area were taken to document the changes.

Findings and Discussion

The landscaping project for the area was prepared in line with landscape design criteria (Figure 4).

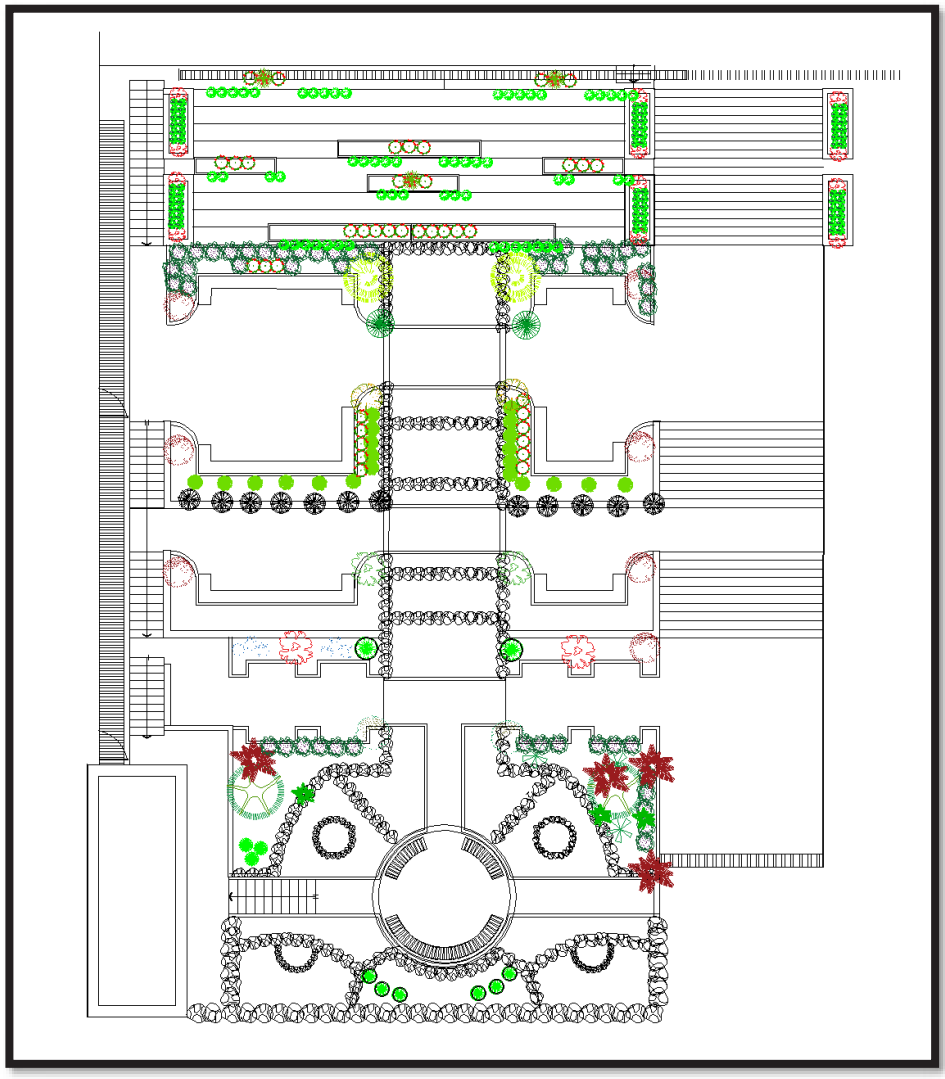

Figure 4. Recep Tayyip Erdoğan University Zihni Derin Campus Student Life Center Open Area Planting Project

Design Phase and Implementation

Due to the topographical constraints, a design has been created for the central and heavily used area of Recep Tayyip Erdoğan University Zihni Derin Campus, which has limited open green space, to optimize the aesthetic and functional features of plants. Taking into account the design elements of line, form, texture,

color, and scale criteria, a total of 25 species of trees, shrubs, and herbaceous-woody plants were used within the scope of the project (Table 1).

Table 1. Plant Species Used in the Study Area and Design Characteristics

BİTKİLER	**HABİTÜS ÖZELLİĞİ**				**TASARIMDA ETKİLİ DENDROLOJİK ÖZELLİĞİ**			
	Ortalama Boy (m)	**Biçim**	**Renk**	**Estetik ve Fonsiyonel Etkisi**	**Biçim**	**Renk**	**Doku**	**Ölçü**
Albizzia jülibrissin	8-10	Yuvarlak	Yeşil	Formu ve Çiçek etkisi	✓	✓		✓
Russelia equisetiformis	1-1,5	Sarkık	Yeşil-Kırmızı	Formu ve çiçek etkisi	✓	✓		
İris laevigata	0,6,-0,8	Vazo form	Mor	Çiçek Etkisi		✓		
Ophiopogon japonicus	0,25-0,5	Yayvan	Mavimsi yeşil	Formu ve çiçek etkisi	✓	✓	✓	
Cortaderia selloana	2-3	Yayvan	Yeşil-Beyaz/Pembe	Formu ve çiçek etkisi	✓	✓	✓	
Yucca filamentosa	1,5-2	Yuvarlak	Yeşil-Beyaz	Formu ve çiçek etkisi	✓	✓		
Acer palmatum "Atropurpurea"	3-4	Yuvarlak	Bordo	Yaprak Rengi	✓	✓		✓
Pennisetum setaceum var. rubrum	1-1,25	Sarkık	Bordo	Yaprak Rengi	✓	✓		
Juniperus sabina "Tamarissifolia"	1,5-2	Yayvan	Mavimsi yeşil	Renk etkisi	✓	✓	✓	
Cydonia japonica	2-3	Yuvarlak	Kırmızı	Renk ve çiçek etkisi	✓	✓		
Juniperus squamata "Blue Carpet"	1-1,25	Yayvan	Mavimsi yeşil	Form etkisi	✓	✓	✓	
Juniperus virginiana "Skyrocket"	1,5-2	Sütun	Mavimsi yeşil	Form etkisi	✓	✓		✓
Lavandula angustifolia	1-1,5	Yuvarlak	Mor	Renk ve çiçek etkisi	✓	✓		

Veronica andersonii	0,25-0,5	Yuvarlak	Mor	Renk ve çiçek etkisi		✓		
_Euryops pectinatus	0,6,-0,8	Yuvarlak	Sarı	Renk ve çiçek etkisi		✓		
Cycas revoluta	1-1,5	Yuvarlak	Yeşil	Form etkisi	✓	✓	✓	
Pyracantha coccinea 'Nana'	0,5-1	Yuvarlak	Yeşil	Meyve etkisi	✓	✓		
Euonymus japonica "Elegantissima Aureus"	1-1,5	Yuvarlak	Sarı alacalı	Form ve renk etkisi	✓	✓		
Dianthus barbatus	0,5,-0,75	Yuvarlak	Kırmızı beyaz	Renk ve çiçek etkisi		✓		
Pittosporum tobira "Nana"	0,5-0,75	Yuvarlak	Yeşil	Yaprak ve form etkisi	✓		✓	
Viburnum tinus	2,5-3	Yuvarlak	Yeşil	Form ve çiçek etkisi	✓		✓	
Parthenocissus quinquefolia	10-20 (sarmaşık)	Sarmaşık	Kırmızı	Renk ve form etkisi	✓	✓		✓
Berberis thunbergii "Atropurpurea Nana'	0,4-0,6	Yuvarlak	Bordo	Renk ve form etkisi	✓	✓		
Bambusa metake	2-4	Sütun	Yeşil	Form etkisi	✓			✓
Salix babylonica	10-15	Sarkık/Salkım	Yeşil	Form etkisi	✓		✓	✓

The area designed to serve the social needs of users such as relaxation, entertainment, and meeting, while also facilitating access to service buildings, has been landscaped in a supportive manner for these needs. In addition to meeting these needs, the principle of 'diversity' from landscape design criteria has been highlighted to contribute to the concept of learning. In this regard, the use of a wide variety of plant species has been encouraged to create opportunities for plant recognition classes to be used as practical applications. To avoid overemphasizing 'diversity' and creating chaos, the principles of 'balance,' 'repetition,' 'symmetry,' 'harmony,' and 'contrast' have been used to create a clear sense of 'unity' in the design. The implementation of the design was evaluated in three stages:

1. Stage: Meeting area (square)
2. Stage: Amphitheater steps and stairs
3. Stage: Surroundings of the water feature

The first stage consists of the meeting area (square), which is located just in front of the main entrance of the Zihni Derin Campus. This area's lower part, facing north, is entirely made up of hard surfaces. Planting has been used here, both to soften the impact of the hard surfaces and to emphasize the entrance to the area using wooden planters. Drainage holes have been made in the planters, and gravel has been added to them for drainage. Then, the planters were filled with an appropriate soil mixture. Circular seating units have been placed around large planters on the left and right sides of the passive entrance area for circulation. Acer negundo has been planted in the planters to provide shade to the area and define it as a relaxation area. Rectangular wooden planters placed along low walls have Campsis radicans planted in them to cascade down the walls. This creates a 'vista' point for the sea view in the north and defines the boundaries of the area (Figure 5).

Figure 5. Seating Units in the Main Meeting Area

The area that has been transformed into a seating area through landscaping design has rectangular wooden planters placed in it to break the harsh effect of the wall of the Student Life Building to the west. Bambusa metake plants have been planted in these planters, creating the impression of a vertical garden on the wall (Figure 6).

Figure 6. Bambusa metake plants softening the wall's impact

2nd Stage: The boundaries of the stairs leading to the south border of the meeting area have been designed in the form of concrete planters. After filling them with an appropriate soil mixture, Phormium tenax 'atropurpureum' has been planted inside these planters to create 'unity' in terms of 'color' with the water feature boundaries and the surrounding structures and to enhance 'direction'. Vinca major has been chosen underneath them to emphasize the steps by creating contrast (Figure 7).

Figure 7. Plants serving as 'border elements' on the steps in the area, providing guidance and separation effects

In the 2nd stage, wooden planters have been placed between the amphitheater steps to create a soft transition from the densely planted upper part. These planters have been filled with proper soil mixture and planted with Ophiopogon japonicus, Russelia equisetiformis, and Canna indica in the center. This area has been evaluated as a visually appealing, passive recreational space (Figure 8).

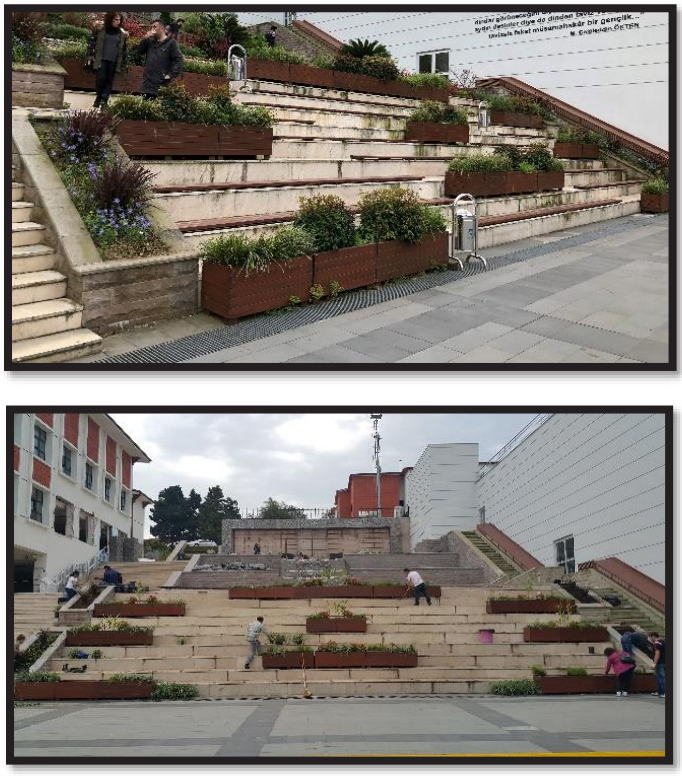

Figure 8. Amphitheater landscaping

3rd Stage: The area around the water feature forms the largest green space in the study area. Infrastructure work such as electricity, drainage, and irrigation was carried out by the Directorate of Construction and Technical Affairs during the hard surface applications. Therefore, in the landscaping stage, the existing soil was excavated and cleared of stones and other materials. Suitable soil mixture was brought in and spread over the area. After leveling, the implementation phase of the design began (Figure 9).

Figure 9. Prepared state of the area for landscaping

This section of the study area is designed symmetrically as a relaxation area with a water feature in the center and wooden seating units on both sides. When designing the landscaping, this aspect of the area was taken into account. While the 'diversity' principle is more noticeable in this area, the 'symmetric' approach has been effective in preventing chaos. In the area shaped according to the gradual flow of water, Acer palmatum 'artropupurea' has been used on both sides as a border element. This plant, which benefits from the 'color' effect, has been used for 'harmony' with the buildings, 'contrast' with the green tones inside the area, and 'bordering' and 'defining' the space. It also creates a 'focus' (Figure 10).

Figure 10. Effect of Acer palmatum 'artropupurea' plant in highlighting the area

Plant heights have been graded in consideration of the 'balance' principle from the lowest level to the highest level of the area. This ensures that the area is effectively visible from the meeting area, using the 'proportion' principle (Figure 11).

Figure 11. View of the water feature and surrounding landscaping from the meeting area

The contrast created by Acer palmatum 'artropupurea' with its 'color' effect has been used throughout the area by incorporating similar-colored shrubs (such as Photinia red robin 'Nana' and Nandina domestica). Care has been taken to use 'contrast' alongside 'harmony' (Figure 12).

Figure 12. 'Contrast' and 'Harmony' created with the 'Color' element

In the circulation transition created by wooden bridges, at the entrance and exit points, a symmetrical 'point' effect was achieved by using similar forms of Cycas revoluta, Ilex aquifolium 'aurea marginata,' and Yucca filamentosa. The diversity in the focal elements has been balanced with harmony in their forms (Figure 13).

Figure 13. Creating a ‘focus’ effect with a variety of focal elements

To reduce the impact of the walls created as a result of the terracing, Juniperus virginiana "Skyrocket" and Cupressus macrocarpa 'Goldcrest' species have been used to screen the view (Figure 14).

Figure 14. Planting in front of the wall

The area's highest element is the wall through which the curtain of water flows. In this section, the screening of the wall, which will also be on both sides of the area, is done with Salix babylonica plants. Thus, while a 'measurement' gradient is created from bottom to top, the emphasis on the water at the top is also realized. The Salix babylonica plants are supported with water-loving plants like Fatsia japonica at the lower parts. In the middle of the falling water from the wall, the Recep Tayyip Erdoğan University logo is placed, with pyramid-shaped Thuja occidentalis smaragd on both sides and a top-shaped Buxus sempervirens in front, creating a 'focus' effect (Figure 15).

Figure 15. Achieving the 'focus' effect through planting

In this study, the aesthetic and functional functions undertaken by these plants, which form the main character of the area, have been completed with shrubs with different herbaceous and woody forms, textures, colors, and dimensions such as Viburnum tinus, Lavandula angustifolia, Cydonia japonica, Veronica andersonii, Fatsia japonica, Euryops pectinatus, Pyracantha Coccinea 'nana', Euonymus japonicus "Elegantissima," and Juniperus sabina "Tamarissifolia." Balanced distribution of evergreen and deciduous species has been achieved throughout the area (Figure 16).

Figure 16. Different views of the area

Conclusion

Universities have a responsibility not only to contribute to society through education and research but also to provide their students, staff, and other users with quality, modern environments and contribute to the aesthetics and identity of the city. In this context, university campus planning is of utmost importance and should be approached with great care.

The landscaping project designed and implemented for Recep Tayyip Erdoğan University's Zihni Derin Campus, which has limited open-green spaces due to its topography, is heavily used by users. Designing a space without users would be meaningless, and the most accurate information about the area is obtained from its users. The implementation of the project has added significant value to the campus. The fact that university students choose this area for relaxation, photography, especially for graduation photos, is an indicator of the positive

effects of the landscaping design on users. It has been highly beneficial for Landscape Architecture students for both design and plant recognition purposes. Furthermore, the ability of the area to maintain its charm throughout the seasons demonstrates the accuracy of the decisions made in the design.

However, a "post-use evaluation" method can be used to gather the thoughts of those who use this area, and adjustments can be made to the implementation accordingly. The findings from this evaluation can also serve as a guide for future campus landscaping designs.

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Chapter 2

The Use of Fungicides and Antibiotics in In Vitro Sterilization of Ornamental Plants

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Introduction

Plant tissue culture is fundamentally a method of production. Unlike other known classical production methods, it involves taking a small tissue piece (explants) from various parts of the plant, sterilizing it, and culturing it in a sterile nutrient medium (in vitro) under suitable environmental conditions (light, humidity, and temperature) (Vidalie, 1986).

In tissue and cell culture studies, plant tissues and organs are grown under aseptic and controlled conditions. This technique is based on the totipotent property of plant cells, indicating the ability of a single cell to form a complete genome through cell division. The potential of totipotency in plant cells, along with their ability to modify their metabolism, growth, and development, is equally important (Rani and Kumar, 2017).

This method is frequently employed when it is crucial to rapidly propagate ornamental plant species that are difficult to propagate, have high economic value, and have slow production rates with traditional methods, in a rapid and cost-effective manner. Additionally, certain plants of high economic importance (such as Primula) can only be rapidly propagated in large quantities using plant tissue culture methods when there is a high market demand, despite being traditionally propagated through conventional methods. This method is used today to assist classical breeding methods due to its potential to enable rapid production of a large number of plants in a short period, controlled growth of plants under laboratory conditions, production throughout the year, and potential to produce disease-free seedlings (George and Sherrington, 1984).

Currently, plant tissue culture techniques encompass a wide range of applications in agriculture, forestry, and ornamental plant pathogen elimination, clonal propagation, long-term preservation, secondary metabolite production, and plant genetic engineering (Babaoğlu et al., 2001; Kocaçalışkan, 2017). Various challenges are encountered in collecting plants from their natural habitats, including the difficulty and cost of collecting plants from their natural habitats, the risk of depletion of generations of constantly collected plants, changes in plant quantity and quality due to climatic conditions, failures in plant cultures, and the need for large agricultural areas to obtain sufficient quantities (Erkoyuncu and Yorgancılar, 2015). Moreover, increasing population and evolving industrialization have disrupted the growth environments of natural plant species and even endangered some species due to their indiscriminate collection from nature. To eliminate these drawbacks, it is necessary to introduce our wild species into cultivation. After the selection stage, one of the most important steps in introducing wild species into cultivation is the development of an effective vegetative propagation method (Dinçer et al., 2016). For these

reasons, biotechnological methods, especially plant cell and tissue cultures, are used as alternative methods to inadequate natural production (Erkoyuncu and Yorgancılar, 2015).

Not only vegetative but also generative production difficulties can be overcome, and rapid and clonal production of plants with great potential for use in various fields can be achieved using plant tissue culture methods. For instance, valuable for fruit, ornamental, medicinal, ecological, and rootstock potentials, Crataegus monogyna Jacq., and Sorbus aucuparia L., which present difficulties in generative production (due to double dormancy), Crataegus pontica K. Koch., and Crataegus meyeri Pojark., can have their generative and vegetative production challenges eliminated with tissue culture methods (Dinçer, 2010; Dinçer et al., 2022; Dinçer, 2023).

In this study, awareness is aimed to be created regarding the introduction of our natural ornamental plants, which are extremely valuable as food, medical, pharmaceutical, aromatic, and ecological potentials, into urban landscapes through tissue culture methods, as they have remained only in rural landscapes due to the difficulties in their production. In this context, the use and effects of fungicides and antibiotics during the sterilization stage, which is one of the first and most important stages in tissue culture, were examined through the literature.

The Importance of Sterilization in Tissue Culture

Plant tissue culture is utilized for various purposes in plant breeding, including developing new varieties, creating genetic variations in existing ones, obtaining disease-free plants, rapid multiplication of plants (micropropagation), propagating species that are difficult to propagate or at risk of extinction, long-term preservation of plants, and facilitating the easy transfer of plants nationally or internationally. Sterilization plays a vital role in achieving these objectives successfully.

The source of microbial contamination that occurs in plant tissue culture applications includes culture vessels, culture media, explants, equipment, the environment of the culture room, and the transfer area (Leifert et al., 1994; Kim et al., 2017). Microorganisms from the surfaces or interiors of the materials used and plant materials can contaminate the nutrient medium, potentially leading to the death of the culture (Ramalashmi et al., 2018).

Successful tissue culture studies rely on effective surface sterilization. Contaminants present on the surface of plants grow faster in the culture environment, releasing phytotoxic substances into the environment, thereby interfering with the culture process (Sivanesan et al., 2021).

The multiplication coefficient of products in studies conducted under aseptic conditions is much higher compared to conventional methods. Since there is no genetic modification in the plant during culture, it is possible to produce identical quality products, copies of each other (Loyola-Vargas et al., 2008). The aseptic environment is especially important for the absence of plant pathogens. The application of plant tissue culture is also crucial for obtaining virus-free plants. Thus, the aseptic tubes used in interregional transfers prevent the transfer/spread of plant pathogens to other regions.

Sources of Contamination in Tissue Culture

Although aseptic conditions are generally used in plant tissue culture, in vitro contamination of tissue cultures by microorganisms is the most serious problem (Omamor et al., 2007).

The media used in plant tissue and cell culture contain various nutrients, minerals, plant growth regulators, vitamins, and sugar combinations. The culture media are also suitable for the rapid growth of bacteria and fungi. These contaminants grow rapidly as they invade plant tissues or cell cultures, deplete the nutrient medium, affect the growth of cultured plant tissues, and ultimately produce toxins that can kill them (Kübra and Doğan, 2019).

A wide variety of microorganisms (filamentous fungi, yeasts, bacteria, viruses, and viroids) and micro-arthropods (mites and thrips) have been defined as contaminants in plant tissue cultures (Altan et al., 2010). Contamination of plant tissue cultures with various sources such as bacteria and fungi can reduce their productivity and potentially prevent successful cultures altogether. Since bacteria and fungi can contaminate the plant culture and pose a constant threat to the explant throughout the culture period, the production of sterile and viable in vitro plantlets is crucial to enhance both sterilization and clonal propagation efficiency (Tilahun et al., 2013).

Endogenous Fungi

Endogenous fungi are fungi that colonize within the living tissues of plants without causing harm to the host plant (Bacon; Sette et al., 2006). They are known not to be easily eliminated with simple surface sterilization methods. Endogenous fungi, which are beneficial for many plants, have been reported to become pathogenic to host plants and contaminate cultured plants when under stress in culture environments (Herman, 1990; Darworth & Callan, 1996). Many trees in tropical regions coexist and survive in the wild with endophytic fungi (Darworth & Callan, 1996). The uncertainty remains whether this relationship will continue to be mutualistic or turn lethal for the growth of plant cultures. This is because

some fungi may proliferate in cultures without being 'vitropathogenic' (Herman, 1990).

Fungal contaminants, by producing phytotoxins that will harm plant cultures to meet their nutrient and oxygen needs in the culture medium, cause various damages such as increasing turbidity in the culture medium, changing pH, and cell death (Hameed & Abass, 2006). The presence of endogenous fungi increases explant deaths (Mng'omba et al., 2012). Therefore, antibiotics and antifungal compounds have been included in the plant tissue culture environment to eliminate or prevent microbial growth (Leifert, 2013). Endogenous fungi can generally be controlled by using antibiotics or fungicides (Niedz, 1998; Herman, 1990). The use of fungicides and antibiotics has gained significant importance in addressing this issue (Mathias, 1997).

Exogenous Fungi

Exogenous fungi live on plant surfaces and can be removed with chemical disinfectants. Many exogenous fungi and bacteria are present on the outer surface of stock plants. Therefore, it is possible to eliminate the effects of these harmful agents with the use of fungicides and proper surface sterilization. It is known that inadequate contact between fungi and the fungicide and insufficient surface sterilization allow exogenous pathogens to continue their activities, proliferate in culture environments, and lead to plant deaths. Detecting the presence of exogenous, endogenous, or both pathogens in stock plants is always challenging. Hence, the use of fungicides like Benomyl before using other disinfectants such as sodium hypochlorite may be recommended (Mng'omba et al., 2012). Benomyl has been used with very low toxicity in plant tissue culture (Niedz and Bausher, 2002).

Antibiotics

Antibiotics also play a vital role in obtaining aseptic in vitro cultures. It has been observed that the use of antifungal agents alone can lead to the proliferation of other in vitro contaminants such as yeast, bacteria, protozoa, and other microbes; therefore, broad-spectrum antibiotics are used to control many in vitro contaminants in plant tissue culture (Mng'omba et al., 2012; Satapathy and Pattnaik, 2019).

The mechanisms of action of antibiotics involve disrupting cell function or cell membrane structure, inhibiting cell wall synthesis, inhibiting protein synthesis, inhibiting the structure and function of nucleic acids, or blocking key metabolic pathways (Wright, 2010; Etebu and Arikekpar, 2016). For an antibiotic used in plant tissue culture to be acceptable, it should not be toxic to plant cells

and should have a broad spectrum of microbiological activity (Pollock et al., 1983). To determine the antibiotic to be used for effective control, it is important to know the source and type of contamination. Antibiotics should be used by sterilizing them through filtration after autoclaving the nutrient medium (Soydemir and Yılmaz, 2022).

Surface Sterilizers and Disinfectants

Surface sterilants can be defined as chemicals that rid plants of all kinds of pathogens, including fungal spores. Generally, surface sterilants act on the outer part of the explants. Various chemicals are used to rid plants of pathogens (chemotherapy) before initiating culture in the environment. They prevent the growth and proliferation of pathogens (Mng'omba et al., 2012). In in vitro studies, the required disinfectant dose and sterilization time vary for each plant to be superficially cleaned of bacteria, fungi, and similar organisms. Therefore, determining the most suitable disinfectant dose and sterilization time is important (Yıldız, 2000). The balance between the concentration of the substance that will carry out the sterilization and the application time of this substance to the plant material is crucial, and the concentration and application time determined should not have a phytotoxic effect on the plant material to be cultured (Özdemir et al., 2016). Therefore, the concentration of the sterilization agent and the treatment time should be standardized to minimize tissue death. The inability to control contamination levels is a fundamental reason for the failure of commercial laboratories (Eed et al., 2010).

To enhance the effectiveness of surface cleaning of stock plants, several surface sterilants, disinfectants, and/or fungicide combinations are used after washing with water. For example, a few drops of Teepol (%0.05) are applied to water. Additionally, washing stock plants with water can enhance the penetration of fungicides into the external plant cells. Generally, Teepol (soapy water or detergent) has been one of the widely used disinfectants or surface sterilants in many plant tissue culture laboratories to enhance the removal of pathogens and/or fungal spores from stock plants (Mng'omba et al., 2012).

Another commonly used disinfectant in plant tissue culture laboratories is ethanol. Ethanol is one of the most common disinfectants used to eliminate pathogens and spores in plant tissue culture. It is often used to reduce contaminants present at every step, from the preparation room sterilization to the sterilization of fungal pathogens and spores in stock plants, to kill pathogens and spores (Mng'omba et al., 2012). Besides alcohol, various chemicals are also used. Some of these include calcium or sodium hypochlorite, silver nitrate, mercuric chloride, hydrogen peroxide, and antibiotics, which show different effects on

different plants (Bhojwani and Razdan 2005, Mahmoud and Al-Ani 2016; Orlikowska et al. 2017; Javed et al. 2017).

To minimize the harmful effects of detergents, fungicides, and antibiotics used to remove contaminants from plants, stock plants should be rinsed thoroughly with plenty of water. Rinsing stock plants with water helps stop the reaction between chemicals and stock plants (Mng'omba et al., 2012).

Selection of Appropriate Fungicides

One of the initial challenges in culture initiation is contamination by microorganisms and browning of explants. Therefore, there is a need for appropriate sterilization techniques to eliminate all microorganisms on the surface and inside the explants without inhibiting or reducing the growth of explant cells (Hardjo et al., 2020).

Some fungicides commonly used to control plant culture contamination during in vitro culture include Benomyl, Captan, Formaldehyde, Sodium and Calcium hypochlorite, Teepol, Mercuric chloride, Copper oxychloride, and Nystatin. Fungicides and disinfectants can be in powder or liquid form (Mng'omba et al., 2012).

The effectiveness of fungicides depends on various factors such as their active ingredients, concentrations, the type of stock plant, the type of fungi they contain, and the duration of exposure. Sterilization agents are also toxic to explants, so the appropriate sterilant concentration and exposure time to various sterilants for explants are required (Mahmoud and Al-Ani, 2016). Inadequate use of disinfectants leads to longer exposure times for the plant, while using concentrated (stronger) fungicides or disinfectants requires a shorter exposure time. Mercury chloride as a culture disinfectant may be stronger than sodium or calcium hypochlorite solutions for decontaminating endogenous fungal contaminants, which could explain its effectiveness (Mng'omba et al., 2012). Danso et al. (2011) reported successful in vitro decontamination of sugarcane explants using mercuric chloride when sodium hypochlorite and calcium hypochlorite were less effective.

Fungicide Toxicity

The use of very potent disinfectants and fungicides can weaken plant cell membranes and cell walls. This can lead to the depletion of cell sap (nutrients) that stimulates overgrowth of endogenous fungi after being introduced into the culture medium, making the fungi in explants become pathogenic (Darworth and Callan, 1996). For example, HgCl2 can be strong for some plants and can easily damage their cells, especially after prolonged exposure (Mng'omba et al., 2012).

The high mortality rate of plant cultures due to cell damage caused by the use of concentrated fungicides or disinfectants can be significant. To avoid unwanted effects on plant cultures, it is important to preserve the cell integrity of stock plants as much as possible (Mng'omba et al., 2012).

Applying fungicides to the main plants in the field before the collection of explants contributes significantly to aseptic cultures. This can reduce the need for stronger disinfectants like HgCl2. It can also enhance decontamination efficiency (Mng'omba et al., 2012).

Disposal of Used Fungicides

Proper disposal of fungicides and other disinfectants is essential. In many plant culture laboratories, after rinsing the stock plants, disinfectants, surface sterilizers, and fungicides are decanted through the drainage system. It is known that disinfectants like HgCl2 are corrosive and can harm the drainage system (Mng'omba et al., 2012). Additionally, many studies have shown various undesirable health effects of mercuric chloride, including neurological, renal, respiratory, immune, dermatological, reproductive, and developmental sequelae. HgCl2 is highly toxic to both plants and animals, and since the disposal of chemicals is difficult, appropriate precautions should be taken before disposal (Mng'omba et al., 2012; Hashim et al., 2021).

For example, digging a pit for the disposal of HgCl2 solutions may be recommended. This is because heavy metals are not environmentally friendly, and proper disposal is required due to their harmful effects (Mng'omba et al., 2012).

In Vitro Sterilization in Ornamental Plants

Despite having many beneficial properties (ornamental, food, medical, pharmacological, aromatic, ecological, etc.), a significant portion of our natural ornamental plants remains only in rural landscapes due to production difficulties. In fact, tissue culture methods are an advantage to bring these plants into urban landscapes and the country's economy. One of the most important challenges at this stage and the first stage of the study is the contamination problem. In addition to the commonly used sterilization method in this stage, the inclusion of some additional steps in the method can be effective. The application of fungicides and antibiotics is one of them. Studies in this regard are increasing day by day.

Satapathy and Pattnaik (2019) added 'Mancozeb' to the sterilization stage in the tissue culture method used for the mass production of Anthurium andreanum and stated that it was highly effective. Hashim et al. (2021) reported that the addition of thiophanate-methyl fungicide to HgCl2 sterilization in Clinacanthus

nutans was effective in preventing contamination. Putril et al. (2019) stated that the treatment of 0.01% Tween-20 and Plant Preservative Mixture (PPM) added to the culture medium after rinsing the stock plants was effective in the sterilization of Callophyllum inophyllum explants.

Huh et al. (2015) used four different biocides in the sterilization stage of micropropagation of blueberry (Vaccinium corymbosum) and stated that the most effective was PPM. Çölgeçen et al. (2011) reported that the treatment with PPM and amphotericin B, penicillin G solutions was effective in the sterilization of Arnebia densiflora Ledeb., and the best result was obtained from explants treated with PPM. Chaithanya Lakshmi et al. (2021) added bavistin and cefotaxime to the culture medium for the sterilization of Ruellia tuberosa L. and found that appropriate doses of fungicides and antibiotics were highly effective. Altan et al. (2010) achieved results by mixing Benomyl and Nystatin in the sterilization of Lilium candidum L. and reported that antibiotics and fungicides were effective in sterilization. Similar studies are available for other species.

Conclusion

The use of fungicides and antibiotics can be effective in the sterilization stage of ornamental plants, which are difficult to produce with traditional methods and whose production is hindered due to contamination issues. However, great care should be taken in the selection of fungicides and antibiotics, considering their effects on the applied plant, and ensuring that they do not harm the environment.

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Chapter 3

Adapting User Experience Research Techniques to the Architectural Design Processes Through Methodological Diversification

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Abstract

Proposing a model for the integration of user experience (UX) techniques into architectural design processes is the purpose of this research study. In this context, the scope of the study consists of prominent figures and studies on this subject with their explanations of the similarities and contrasts of UX and architectural design development processes. The method of the study consists of analysis and synthesis of studies focusing on the integration of user experience (UX) techniques into architectural design processes through literature research. The findings of the study indicate that, in addition to basic processes such as prototyping and wireframing, all survey, testing and analysis processes must take into account the resources in the work environment, the nature of the designer, the nature of the design tool and the rules or habitual behavior within the organization in order to be applied to the practical process of samples that express spatial context and meaning. can be listed as. The original value of the study is essential because there are few interrelated case studies on the fields of architectural design and user experience. The result of the study shows that a model to be proposed for the integration of user experience (UX) techniques into architectural design processes can play a critical role in both the beginning of architectural design and the finalization of architectural design processes. This indicates that by adapting the hierarchical and sequential layout logic in UX techniques to architectural design, features such as profitability, diversity, solution-oriented and quick updating can be observed more effectively in architectural products.

Keywords: architectural design, user experience, architectural user, architectural space

INTRODUCTION

For architectural design and similar design systems, it is decisive to know that being user-oriented is the most extensive criterion of user experience design. It has been understood that design thinking in human-centered user experience and user interface designs can mature by including strategies that require observation of human behavior to solve problems. Considering that examining design problems is a cyclical process, it becomes essential to maintain iterative design approaches in addition to fixed design approaches in user design, and in addition to positioning continuous feedback as one of the most critical goals. All user experience design processes that follow different processes and methods actually give decisive ideas that design-oriented thinking ability is a complete user analysis process. In this regard, user interface experience and user experience design processes regarding the design of a cloud-based recruitment system provide strong examples (Shafiee et al, 2023). In some cases, there may be uncertainty and debate about what user experience design is and what exactly a user experience designer does. This is due to both the fact that the concept has not yet been sufficiently understood by the masses and the fact that Nish has defined an area of popularity. Discussions may not provide a direct insight into the scope of a user experience design project or the work the user experience designer has done (Green and Labrecque, 2023). User experience is also one of the most effective tools that can be used to differentiate products. If the product team organizes various sessions and develops a user experience design vision to help make goal-oriented decisions, supported by the process of filling out a survey by the participants, the differences between good practices and bad practices become more clearly identifiable. Determining the decision-making procedures of the participants and developing these already more descriptive strategies contain extensive clues about how the approach to developing a user experience design vision can encourage processes focused on speed and simplicity. The impact of questions and observations on participants' decision-making procedures reveals that it is almost impossible to study without user data (Winter et al, 2023). In relation to this issue, the sequential relationships and potentials of UX design steps in terms of architectural design become essential (Image 1).

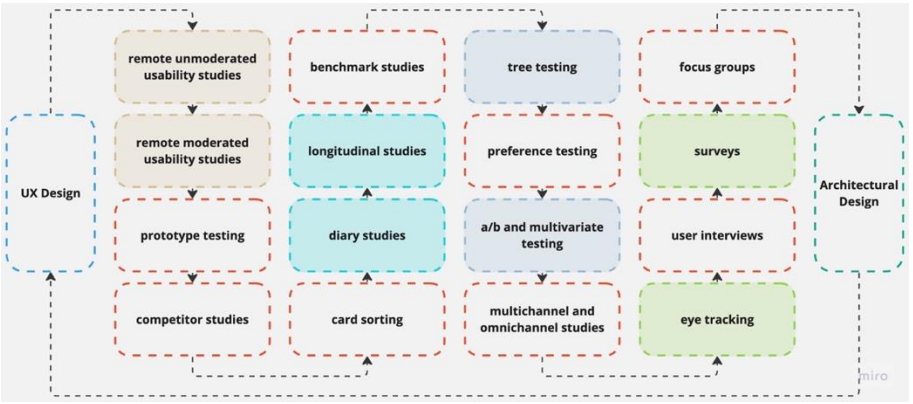

Image 1: Sequential relationships and potentials of UX design steps in terms of architectural design. Created by the author specifically for this article.

2. Potentials of UX for Architectural Design Process

The fact that user experience is taken into account by more and more people helps to understand that this is not only a product and design issue, but also a process design that allows quality to be evaluated together with the user. In this context, in order to understand the processes related to the misuse of user experience design, it may only be possible to detect some errors by reanalyzing those processes. Re-evaluating a design project for analysis can provide essential insight into whether key variables such as perception and user effects have been taken into account. Estimating the future steps of a tool to be developed to create a common model of the agricultural process can only be possible with a comprehensive reading of the past. This evaluation process is based on the knowledge that while user experience design takes a collective diagnosis-oriented approach, it may show mediocre performance due to ignoring perception and influence processes. One of the biggest factors in misuse and neglect of processes for developing digital products may be that design processes are generally loose. In addition, some basic mistakes may have been made in the formulation of the user experience design or it may not have achieved the desired success due to various deficiencies in traceability. When all these are evaluated together, it becomes clear that in order for user experience design to be intertwined with product development processes and to be carried out successfully, a qualified retrospective analysis process must be run in terms of user experience (Dabouis et al, 2023). Related with this experience, comparison of UX design steps in terms of architectural design can be more similar than industrially emphasized (Image 2).

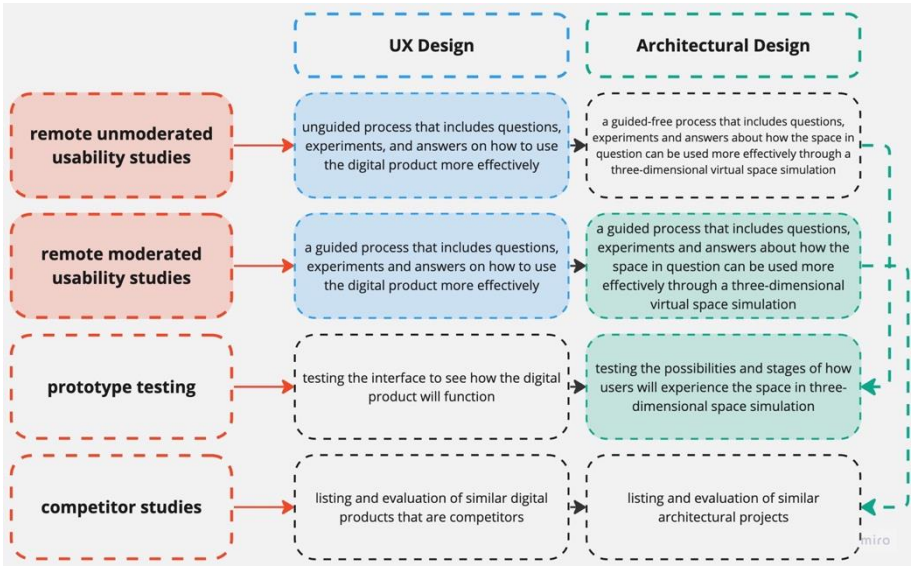

Image 2: Comparison of usability studies, prototype testing and competitor studies in terms of architectural design. Created by the author specifically for this article.

In addition to all these, it is seen that user experience literacy and user experience practices do not match proportionally in companies and organizations that continue to work in agile user experience environments. While user experience design stakeholders focus on systems that meet user needs, it is understood that the user experience literacy data obtained in surveys and semi-structured interviews provide results that do not parallel these focusing processes. Incentive processes related to the development of the user experience design, which enable the evaluation of deficiencies in the process and possible negative problems between working groups, can be carried out after a period in which literacy and implementation steps yield similar results after being subjected to measurement and evaluation (Azavedo et al, 2023).

3. User Experience Methods for Architectural Design

Although "User Experience Research" and "User Experience Design" are intertwined processes in most design processes, the UXR process is expected to reach a certain development before the UXD process can be started. Titles such as "Interaction Design" continue to be operated as part of the "User Experience Design" process (Schmidt et al. 2020). Studies on remote unmoderated usability studies and remote moderated usability studies can be listed as follows. By developing a mobile application called ONT UKNI in Indonesia, it was aimed

to improve the success of nursing exam participants. The interaction of nurse candidates is measured and evaluated with the help of a test simulation. It is emphasized that more interactive and inclusive interfaces can be designed by eliminating the deficiencies in the context of UI design and gamification over time (Relawati et al. 2022). Bittencourt, Pereira and Junior (2015) emphasize that the concept of "usability" is present in all interactions between the user and the object, and remind that this concept, in addition to being a product, has been presented with different classifications such as functional, technical, aesthetic and economic architectural qualities for the built environment throughout history. . In this context, it is seen that the aim is to develop the concept of "usability" in all processes of analyzing, selecting and arranging the basic dimensions (objective and subjective) and spatial categories of built environments. In various fields of knowledge, "usability" is an object of research that describes the ease of use in response to the triad "user - task - physical environment". In terms of the lack of specific measurement techniques, it is seen that usability studies in the building should be completed by considering a multidisciplinary approach (Bittencourt et al. 2015).

In terms of technological developments, it is still unclear how virtual reality (VR) can help architects in the early stages of ideation and design. On the other hand, it shows that, when the necessary facilities are provided, VR solutions are more effective than existing CAD software in terms of model production processes and can quickly create simplified models. One of the prominent studies on this subject, the study based on the use of Maquette, shows that it can be used in topics such as developing the creative process, understanding body scale, improving hand-eye coordination, especially in the early architectural education stages (de Klerk et al. 2019). Comparison of SketchUp and Maquetter interfaces through the use of VR is a successful example of comparison processes that can be evaluated using a “remote unmoderated usability study”. It is seen that "remote unmoderated usability study" processes can be run in the process of determining how the environmental experience will be designed. Comparison of different UX design steps in terms of architectural design can widen this approach through benchmark studies, longitudinal studies, diary studies and card sorting (Image 3).

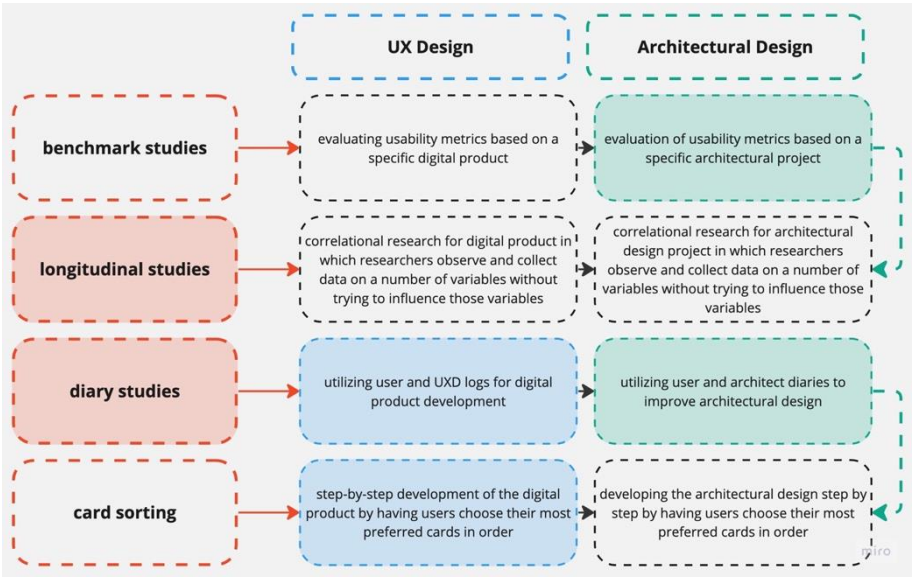

Image 3: Comparison of benchmark studies, longitudinal studies, diary studies and card sorting in terms of architectural design. Created by the author specifically for this article.

At this point, "usability" was examined in the development of design processes in an elderly care center, and inputs regarding users' expectations and needs were also included in IEQ building performance data. The study contains data showing that the concept of "usability" should be directly included in the architectural design and architectural environmental design processes in order to identify and develop specialized needs over time. Another related study includes the main objectives of "Determining the strengths and weaknesses of proposed human-moderated remote protocols" and "comparing and contrasting local to human-moderated remote testing". The study, which consists of the steps of "questionnaire completion, think-aloud, qualitative data, task completion, number of usability problems found, total test time, efficiency of communication", respectively, shows that remotely directed "usability" studies offer much more effective solutions in terms of cost and local It was concluded that it can replace the studies (Vasalou et al. 2004). Rubin and Chisnell (2008) lists usability techniques as ethnographic research, participatory design, focus group research, surveys, walk-throughs, open and closed card sorting, paper prototyping, expert or heuristic evaluations, usability testing and follow-up studies. Regardless of whether it is "unmoderated" or "moderated", when we look at the basics of the methodology in "usability" tests, it is seen that a hypothesis must be formulated first. Participants are assigned to experimental conditions, strict control mechanisms are implemented, and control groups are defined. Users should

be suitable for statistical evaluation in terms of quantity and quality, and care should be taken to create groups that can provide the number and density in which significant differences can be observed. When we look at the basic components of the "usability testing" process, it is seen that determining the research questions or test objectives comes before determining the hypothesis. Use of a randomly or deliberately selected representative, representation of the current state of the workspace, observation of end users using or interpreting the representation of the product, participant testing based on controlled and/or intensified interviews, accumulation of qualitative and quantitative performance and preference measurements, and recommendations on the project development process are among other components. When we look at the constraints of the "usability testing" process, we see that testing is always an artificial process. Test results do not provide data that directly guarantees that a product will function correctly. Participants may rarely be a strong representative of the target population. Additionally, testing may not always be the best technique for product development (Rubin and Chisnell, 2008). The most basic form of usage that should be discussed under the title of “Prototype testing” is “paper prototypes”. The use of “paper prototypes” stands out as one of the techniques that can be applied in the UI design process. Advanced Computation Lab of Cancer Research UK, which was chosen as the application site, provides decisive details in terms of its contribution to the functionality of the development steps of the "paper prototyping" model in the development of the application called Tallis (Russell-Rose and Oettinger, 2005). In the study, it was seen that the "paper prototyping" model allowed the differences between two complex user interfaces to be discovered more quickly and effectively and to find answers to some difficult questions in a relatively short time. Key benefits, such as allowing users to change the menu when they have difficulty finding a particular menu item, show that prototyping can be used to identify essential variables, track them, and change them where necessary.

From an architectural point of view; a conceptual model using contemporary digital models and physical models is discussed in terms of the components changing the pace of process within basic to complex steps. While the digital model consists of representation, generation, operation and interaction; the process of physical model includes representation, manufacturing and operation. In addition to that, the digital model is in an interaction with parametric design tools, simulation tools and building information modeling systems whereas physical modeling uses processors, actuators and sensors (Kim, 2019). In order for the prototyping process to be applied to the practical process, it is also emphasized in this study that the resources in the working environment, the nature of the designer, the nature of the design tool, and the rules or habitual behaviors within the organization must be

taken into account. In this context, it is essential to follow a process that closely examines the conditions of the working environment by conducting surveys among practitioners, similar to detailed analyzes of design firms. Christensen and Hansen (2008) mention three different architectural prototypes: exploratory, experimental and evolutionary. Architectural prototypes also have an active role in the processes of information transfer and evaluation of the architectural suitability problem, in addition to managing the installation processes necessary to explore and learn the architectural design field, addressing problems related to quality features, identifying components that do not provide functionality on their own, and addressing architectural risks. Ivarsson and Nicewonger (2019) similarly remind us that by using the empirical form of reasoning, a number of new possibilities emerge for theorizing architectural practices. This enables open-ended questioning of fundamental ideas and techniques, enabling architects to update their ability to further their understanding of design and thus gain new reasoning and knowledge about ways of designing sustainable architecture. The similarities between ux design and architectural design can also be emphasized by tree testing, preference testing, a/b testing, multivariate testing, multichannel studies and omnichannel studies (Image 4).

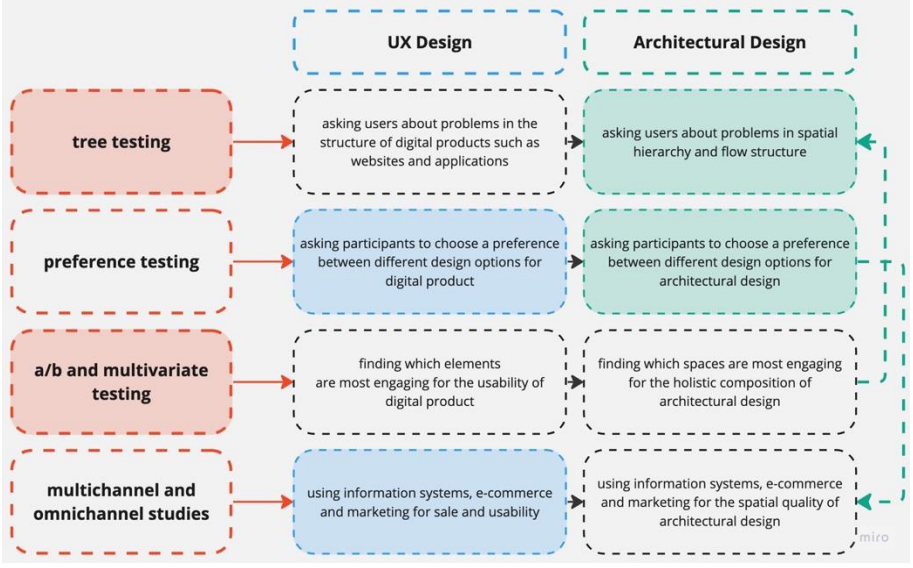

Image 4: Comparison of tree testing, preference testing, a/b – multivariate testing and multichannel/omnichannel studies in terms of architectural design. Created by the author specifically for this article.

Competitor studies is another field with strong potential for direct involvement with architectural design. Regarding the Competitive Benchmarking and Analysis Group Evaluation processes, Rubin and Chisnell (2008) mention that some organizations appoint a group (or an individual) to conduct comprehensive benchmarking on their own and their competitors' products. As a result, it is necessary to clearly address not only who uses companies' products, but also who uses products from rival companies. The information source required to create the user profile can be more effectively represented, developed or changed by analyzing a sufficient number of competitors. Similarly, the OECD 2021 report explains methodologies to measure market competition. Two concepts of competition are explained as "Competition as a static state" and "Competition as a process of rivalry". The measures of competition consist of "structural measures", "performance measures", "consumer and business survey measures" and "other measures". Measuring market competition includes the need for a plurality of competition measures, the level of data aggregation, the need to take account of the dynamic aspects of competitive rivalry and the importance of imports, exports and multinational firms (OECD, 2021). When viewed from the context of architecture, the following relationship can be seen: In an architecture related study, nine managerial interviews are conducted in five architectural practices are analyzed using computer-assisted qualitative data analysis software. The managerial representations are consolidated into 20 themes (Bruen et al., 2022). Newton and Backhouse, 2013, mention the importance of architectural competitions in terms of visualizing the idea clusters before the project production processes and achieving thematic integrity. At this point, architectural competitions can be compared to the compilation of the industry's prominent design solutions through a "competitor study" process. In both invited competitions and competitions open to all professional architects, when the jury evaluates the projects together and prepares the jury report, it indirectly and partially carries out a "competitor analysis" within the sample of the competition participants. Benchmark studies can also give successful results if used in the field of architecture. Schrepp, Hinderks and Thomaschewski (2017) emphasizes the importance of benchmark with the measurement of attractiveness, efficiency, perspicuity, dependability, stimulation and originality for User Experience Questionnaire. Benchmark allows comparing the results of one product to a large set of other products. The team describe a benchmark for the User Experience Questionnaire (UEQ), a widely used evaluation tool for interactive products describe how the benchmark can be applied to the quality assurance process for concrete projects (Schrepp et al. 2017). The difficulty of

characterizing architectural offices in terms of performance and applications also stands out as a problem related to this issue (Salvatierra et al. 2019). A sample study of nine Chilean architectural offices is conducted through a benchmarking process to evaluate both performance indicators and relevant management practices. The key performance indicators obtained in this process provided distinctive outputs regarding the process, financial situation and company quality. Yun and Jung (2017) aim to provide a benchmarking framework that evaluates sustainability in industrial construction and evaluates sustainability issues from a management perspective, with their work contributing to providing a benchmarking method for sustainability practices at the project phase level. Shahrestani, Yao and Cook (2014) also emphasize that the modern built environment has become more complex in terms of building types, environmental systems and usage profiles, and this complexity causes difficulties in optimizing the energy design of buildings. At this point, in order for the "benchmarking" process to be used actively, a platform is provided for policy makers to evaluate the impact of different building energy policies by providing a building comparison criterion (Shahrestani, Yao and Cook, 2014).

Longitudinal studies also have extensive potential for architecture. In the context of UX development, Harbich, Stefanie, and Hassenzahl (2016) analyze interfaces that present data in terms of user attributes and product attributes, pragmatic quality, and hedonic quality, while examining changes in four groups of behaviors deemed imperative for achieving the goal. Thanks to the use of navigation opportunities along with natural interaction, all actions taken to explore a building and strengthen the post-visit experience can be evaluated and improved for users. In this context, virtual spaces can be revised through experiments and research and development studies not only in video games but also in many areas of daily life and can offer a series of solutions to replace real spaces. Natural user interfaces (NUI) combine navigation data with the help of a depth camera and track and record users' movements in the test by gradually increasing its complexity. After the entire testing process, users filling out a series of surveys are influential inputs to show the benefits of combining these two technologies and how three-dimensional solutions such as video games can achieve a successful user experience with the help of a typical UX interaction scenario. The studies carried out here constitute a critical example of how contemporary museology techniques can be developed and how three-dimensional and virtual opportunities can be used (Barneche-Naya and Hernandez-Ibañez, 2023). Studies showing that when building information modeling (BIM) and the Internet of Things (IoT) are used together, some solutions can be offered for people with Alzheimer's disease (PWAD) stand out

as striking examples in this regard. In therapy-oriented studies, these situations, where people's health conditions are taken as a reference and various parameters can be determined and changed according to these situations, can be optimized with the use of basic components of UX. At this point, it is understood that UX components make significant contributions to staging and layering, in addition to the ability to sort processes hierarchically. At this point, this comprehensive approach designed with UX support is used to digitize the data of old buildings with the help of BIM, to determine strategies regarding sensor selection, to define activities and detect anomalies in the process, and to be more in line with reality and user demands by incorporating real-time data into the BIM system. It seems that it can be used to produce suitable solutions. Thanks to this situation, decisive data is collected that many people related to design processes, especially architects, can use UX criteria in architectural design processes (Elnimr, 2023). It is essential at this point to understand that the media types on university websites have a much more extensive connection with architectural education than is thought. In addition to the use of CAD programs, experiments on how graphic expression in architecture, art education and user experience design can be included in education can only be understood from a contrasting perspective, how they can establish a direct relationship with the content of university websites and university education. At this point, focusing on graphic design allows us to address many themes that require relationality and connection, and opens up the space to evaluate and develop these virtual user experience areas, which are positioned as the interface of university education (Ficarra et al, 2018). Educational needs also combines the necessity of focus groups and interviews through the comparison of UX design steps in terms of architectural design (Image 5).

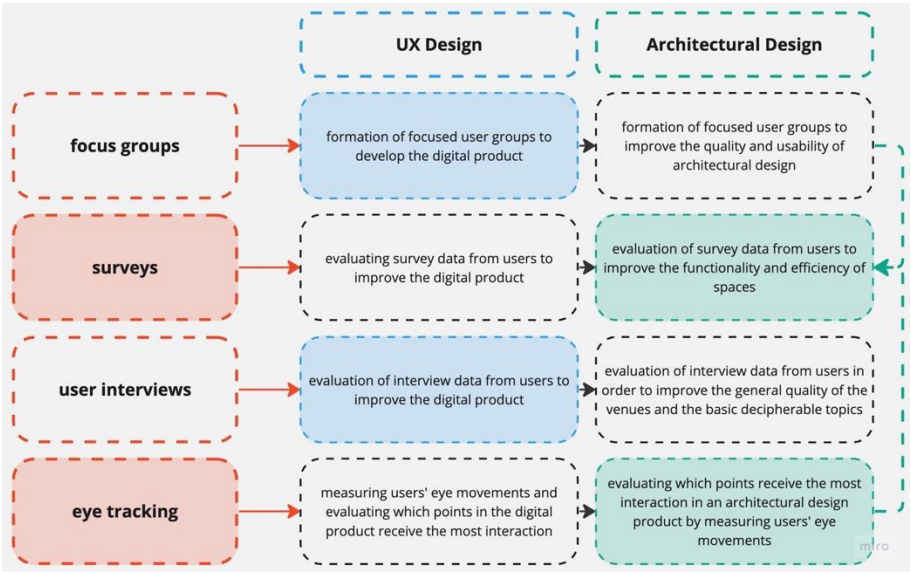

Image 5: Comparison of focus groups, surveys, user interviews and eye tracking in terms of architectural design. Created by the author specifically for this article.

Although user experience is generally shaped around the studies on websites and mobile applications, it seems that intensive studies on user experience should be carried out on mobile games as well. Since the development of mobile games is now much easier than in previous years, the scarcity of studies on user interface design and user experience design on this subject can serve as a main motivational trigger in this regard. The importance of material design, which is one of the least mentioned points in user experience design, is not an issue that only mobile application developers should take into consideration. A model which includes all the necessities in terms of mobile usability and spatial integration can reframe the perspective for architectural design processes using ux techniques.

In addition, the participation of industry professionals with different approaches to material development processes will help in the development of mobile games, as well as three-dimensional space design, the creation of transitions between these spaces and the production of grapes and answers to different staging situations. The fact that there are few studies on user interface design for mobile games and many basic variables such as the ability to play mobile games through existing game engines indicate that this industry will become even more popular in the coming years and that gradual transitions in

mobile games will create more intersections with the subject of user experience design (Hsu and Ling, 2023).

Another of the least mentioned topics related to user experience design includes the issue of sound. The processes related to the use of permission are associated with few tools and skills, and voice continues to exist as a primitive everyday value. On the other hand, the idea that sound can be used as the first drawing receiver brings with it a series of discussions and areas of work in which user experience designers can incorporate sonic drawing tools into their work. If the technologies that will define sound features focus on the character of the sound and specific perspectives on sound shaping rather than mainly musical features, many design processes, especially mapping, can be meaningful and associated with sound. The fact that sound is so influential in the development of digital products reveals that sound is actually a tool capable of shaping the digital product, not as a two-dimensional auxiliary tool, but as a direct physical element. Determinations determined by user experiences contain data that will enable sound to be used and tested as a drawing tool in the prototyping and user testing steps (Vardanyan and Huisman, 2023). The holistic model including the sequential relations between UX and architectural design can provide an approach through the reevaluation of intersectional areas (Image 6).

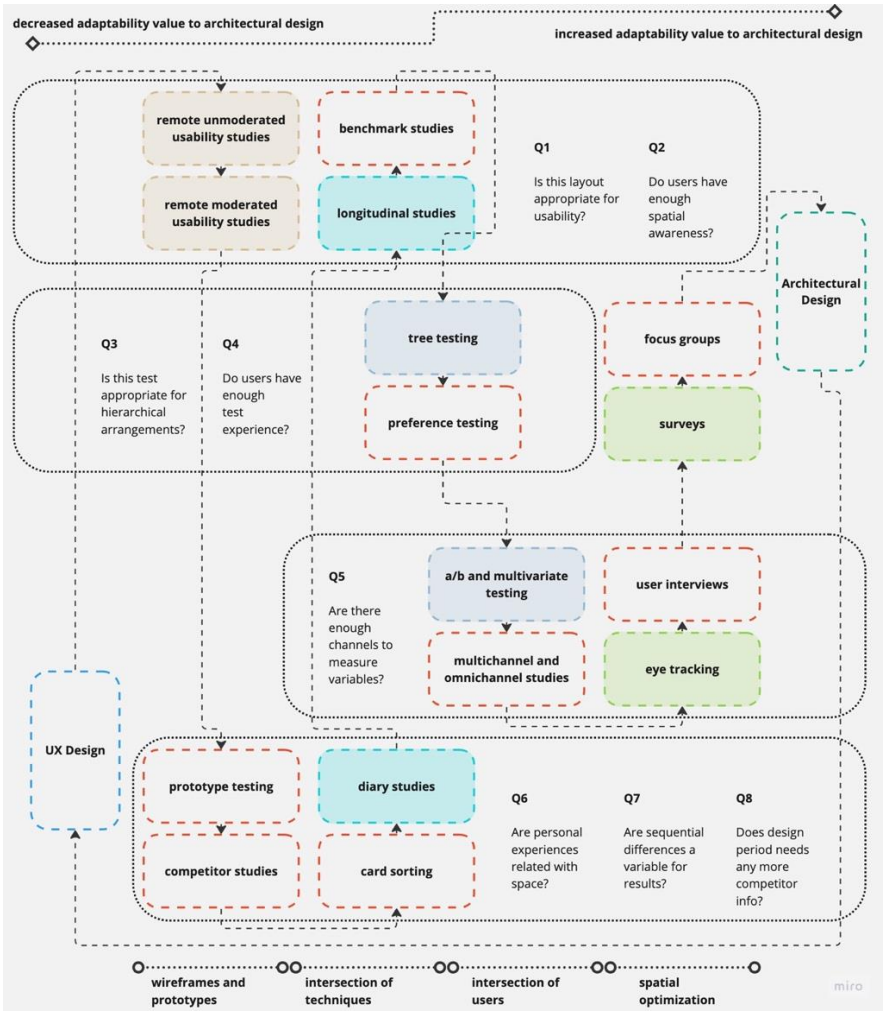

Image 6: The holistic model including the sequential relations between UX and architectural design. Created by the author specifically for this article.

It should not be forgotten that taking into account the diversity of users in order to get to the theoretical foundations of the stages will provide an decisive and innovative experience. In order to take a more inclusive and egalitarian approach, detailed research should be conducted on how design creation processes will contribute to user experiences. For this, the necessary speculative solutions should be included in the working process and it should be understood that user experience design should be equipped with strategies on how to ensure a more sustainable future. It seems that developing a speculative design workshop for students and offering new solution suggestions for direct use of artificial intelligence tools in the user experience design process can contribute

to the traditional user experience methodology. As an added value to the increasing complexity of the world, prioritizing user diversity will make the user experience design process more multi-layered, and this layer staging will result in positive feedback from user groups with different taste levels and different sensitivities (González-González, 2023).

The limited study on how artificial intelligence can be used in areas based on human creativity and direct human contribution leads to some limitations in user experience design processes. For this reason, it becomes critical to develop strategies that use artificial intelligence to provide solutions for how a user-centered design and development process can be active. The increase in initiatives and trials regarding its use in collective organizations is seen as an extensive input in this context. Approaches to crisis management that focus on how artificial intelligence will evaluate and handle the tasks performed by humans will improve both user experience design and user interface design, and will mediate the formation of a bond between design and user by increasing user brain levels (Stige et al, 2023).

CONCLUSION

User experience design techniques, which are considered according to an evaluation scale between "decreased adaptability value to architectural design" and "increased adaptability value to architectural design", find a place in this scheme according to their possibility of use and efficiency in terms of architectural design. In this context, remote unmoderated usability studies, remote moderated usability studies, benchmark studies and longitudinal studies are evaluated in a group due to their interrelationships and their potential to provide data to the first stages of the user experience design process. The questions regarding this group, which are considered to be relatively more related to architectural design, are, respectively, "Is this layout appropriate for usability?" and “Do users have enough spatial awareness?” was determined as . Because these questions contain some basic essences that can be associated with space so that user experience design techniques can be used in terms of architectural design. In the second group, “Is this test appropriate for hierarchical arrangements?” and “Do users have enough test experience?” It seems that your questions will gain importance. These questions stand out as questions that should be addressed together with tree testing and preference testing. Focus groups and surveys are excluded from these focus and grouping areas because they are a general form of evaluation. In the next field, “Are there enough channels to measure variables?” It is seen that the question is mostly related to the fields of a/b and multivariate testing, multichannel and

omnichannel studies, user interviews and eye tracking, respectively. And in the last work area, “Are personal experiences related with space?” The question describes an area where user experience design and architectural design overlap with users. Here, “Are sequential differences a variable for results?” and “Does design period needs any more competitor info?” The questions are related to prototype testing, competitor studies, diary studies and card sorting. The findings of the study indicate that, in addition to basic processes such as prototyping and wireframing, all survey, testing and analysis processes must take into account the resources in the work environment, the nature of the designer, the nature of the design tool and the rules or habitual behavior within the organization in order to be applied to the practical process of samples that express spatial context and meaning. can be listed as. The original value of the study is essential because there are few interrelated case studies on the fields of architectural design and user experience. The result of the study shows that a model to be proposed for the integration of user experience (UX) techniques into architectural design processes can play a critical role in both the beginning of architectural design and the finalization of architectural design processes. This indicates that by adapting the hierarchical and sequential layout logic in UX techniques to architectural design, features such as profitability, diversity, solution-oriented and quick updating can be observed more effectively in architectural products.

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Chapter 4

Historical and New in Architectural Competitions: Reuse Italy

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ABSTRACT

Architectural competitions in fields such as architecture and urban planning provide an interactive platform for testing and evaluating different approaches to solving problems. They enable the selection of the most appropriate solution from various alternatives and encourage interaction between competition organizers, clients, teams, individuals, jury members, and designers. Through colloquia, they facilitate the participation of a wide range of individuals, thus increasing the level of interaction. Because they encourage free thinking, these competitions often lead to solutions that emerge in an independent environment and produce rich and innovative results. In this context, the use of architectural competitions can be beneficial in various types of development projects. They can also be used as a method to overcome the challenges encountered when combining historical and new elements in fields such as architecture and urban planning. In this research, the interaction between historical and new elements is explored through the research of the "Reuse Italy" competition and its results. The results of this research suggest that architectural competitions help to achieve a balance between historical and new elements by offering a variety of intervention methods, floor plan typologies, façade choices, and functional proposals for comparison. Conducting such competitions not only contributes to problem-solving, but also provides valuable insights for researchers, architects, professionals in related fields, students, and the general public. Therefore, it is recommended that architectural competitions be held for topics that involve the interaction between historical and new elements in fields such as architecture and urban planning. These competitions create environments where participants can engage, exchange ideas, and develop different alternatives.

Keywords: Architectural Design, Conservation, Architectural Competitions, Historical Buildings, Ruin, New in Historical Buildings, Reuse Ita

AN OVERVIEW of ARCHITECTURAL COMPETITIONS

Architectural competitions can be considered one of the most valuable methods among architectural project acquisition strategies. Competitions, conducted by an impartial jury, serve as a method of selecting from among all the designs submitted by various teams and individuals the one that is most appropriate or closest to the ideal in terms of all aspects of the design theme. Among the awards given, recognition is given not only to the designs that come closest to the requirements, but also to those that are deemed worthy from various perspectives, including first place, second place, third place, honorable mentions, special jury awards, and more. In this context, the start of the competition creates an interactive environment between the organizers of the competition, the institution requesting the design, teams, individuals, jury members, and designers. This interaction is further developed through competition colloquia attended by all competition participants and other interested parties. Architectural competitions, by their very structure, are a method that supports free thinking in the attainment of a project. What counts is the idea and the design alone, without regard to certain characteristics of the architect responsible for the project (Kuçak Toprak, 2017).

The concept of competition, with its elements of contest, original production, comparison, and reward, creates a distinctive framework in this field. Perhaps the most powerful aspect of this framework is the provision of a platform that encompasses virtually every dimension of our profession and provides a space for critique, examination, and even challenge (Özbay, 1993:34-35).

The history of architectural competitions has deep roots in Western culture. About 2500 years ago, the Acropolis in Athens was decorated and completed through an architectural competition. During the Middle Ages, many cathedrals were won through architectural competitions. Today's architectural competitions can be seen as a continuation of a process developed during the early Renaissance. Open competitions were held from the late 18th century in the United States, Great Britain, Ireland, and France (Huoteli, 2006).

Looking at the themes of the competitions, we find that there is a great variety of competitions worldwide. These topics can be divided into several overarching categories, such as applied architectural competitions, idea-based competitions, and product design competitions. Applied and ideas-based competitions cover various topics, including housing, education, healthcare, museums, and more. The competitions are held for different types of buildings, building complexes, and their surroundings. Some competitions directly address current issues such as refugees and poverty.

In terms of idea-based competitions, there is also a growing trend toward competitions that deal with visions of the future, often with utopian and/or dystopian scenarios and designs[1].

[1] The relevant information was compiled based on research on platforms such as Archdaily, Buildner Architecture Competitions, Competitions archi and others.

Today, many iconic architectural works that have shaped the field of architecture have been created through architectural competitions. These include such significant structures as the Sydney Opera House in Australia (1955 - Jørn Utzon, Peter Hall) and the Centre Pompidou in Paris, France (1977 - Renzo Piano, Richard Rogers). Architectural competitions have played a crucial role in shaping the architectural landscape and producing innovative and groundbreaking designs.

In today's world, competitions are no longer a mere professional practice for architects or a repetitive exercise for architecture students. Competitions have also evolved into a field of research in their own right. The consideration of competition as a field of research represents a new stage of development in which academic interest and research needs are beginning to meet (Andersson et al., 2013:7-13).

Various studies and research[2] have been conducted on architectural competitions, examining their relationship to social structures, cultural contexts, social frameworks, and political factors. These studies have also analyzed the distribution of competition themes, design methodologies, and visualization techniques. In addition, this research has provided recommendations for conducting competitions in a democratic environment, analyzed the results of various competitions, and evaluated the implementation of the results. These comprehensive studies contribute to a deeper understanding of the multi-faceted impact of architectural competitions on society and the built environment (*Architectural Competition*, 2023a; *Architectural Competition*, 2023b).

Architectural competitions have a 2500-year-old history and are still important today, both in the context of project acquisition and in the context of academic research. By their very nature, competitions can be an appropriate method for finding solutions to various design problems in the field of architecture.

HISTORICAL and NEW in ARCHITECTURAL COMPETITIONS

The relationship between the historical and the new is an important research topic in the field of architecture, and ideas for its resolution are explored extensively both in academic studies and through practical examples.

In the architectural design process, the historical and the new can come together in a variety of ways, such as designing new buildings within a historical context, often amidst structures built in the recent past, historical buildings or groups of buildings, repurposing historical structures, and adding new structures to historical buildings.

The most critical element identified in the literature studies is that when the historical and new come together, care must be taken not to compromise the existing historical buildings while designing the new additions to be appropriate to their function and the era in which they were created (International Council on Monuments and Sites (ICOMOS), 1964, 1972, 1975b, 1975a, 1975c, 1982a,

[2] Web of Science, Scopus

1982b, 1987, 2011; International Council on Monuments and Sites (ICOMOS) & United Nations Educational, 1986; Kuçak Toprak, 2020b, 2020a, 2022; United Nations Educational Scientific and Cultural Organization (UNESCO), 1982, 2005, 2015). In addition to this aspect, there are different opinions about the functional and formal relationships. These opinions can range from similar to different viewpoints. When it comes to the complex issue of integrating the historical and the new, different ideas have been developed in different fields of study (Al Kodmany & Ali, 2013:67; Alderson, 2006:22-33; Doesburg, 1932:183-185; Günay, 1992:11-14; Kurrent, 2001:39-41; Listokin, 1997:199-213; MacCormac, 2008:9-11; Mills, 2002:3-16; Ptichnikova, 2016:1903-1910; Smith, 2008:2).

Architectural competitions, because of the characteristics mentioned in the introductory section and the richness they offer in the development of ideas, can be an important tool for evaluating different alternatives and promoting diversity of ideas in addressing this problem.

However, the results of the review show that both the competitions conducted and the academic studies on competitions have addressed the topic to a lesser extent compared to other topics. For example, a search of the keywords "architectural competition/architectural competition" in the "Web of Science" database yielded a total of 461 publications, but only 2 publications were found that directly addressed or focused on competitions in the context of historical sites and conservation.

Mikelstone's research looks at the legal provisions related to the city of Riga, which is listed as a cultural heritage site by UNESCO. In particular, it examines the regulations that relate to the preservation of new buildings through competition. In this context, competitions serve not only to identify the best alternatives but also as a means to prevent hasty and inappropriate development. The research aims to analyze the challenges in the convergence of cultural heritage and modernity. The research examined cultural heritage competitions held between 2004 and 2014 (Mikelsone, 2016:272-282).

The other research is about the impact of the Aga Khan Architecture Awards on historical preservation and the evaluation of the competition for the renovation of the Samarkand Center (Porter & Khan, 1992:102-105).

On various architectural platforms[3], it can be observed that the relationship between the historical and the new is being questioned, and design proposals are being developed in various competitions. Many countries around the world have begun to use competitions as a contemporary method for designing new buildings in historical settings or for planning new arrangements in historical structures. Based on the information gathered, it was determined that the topic can be studied in five different categories. These categories are explained below using an example competition:

Reinterpreting: For example, the "Reinterpreting the Space" competition, opened in 2023, aims to preserve and promote cultural heritage and identity in

[3] Archdaily, Buildner Architecture Competitions, Competitions archi

the face of war and destruction in Ukraine. In line with this goal, a competition was launched to revive the historic Potocki Palace and its surroundings with a cultural function (*Reinterpreting the Space*, 2023).

Şekil 1: Photographs related to the Potocki Palace[4].

Reconstruction and/or Restoration: In 2023, for example, the "Saving Schindler's Ark" competition, aimed at students, was organized in two stages. The first stage was defined as "The Museum of the Survivors"," in which the reconstruction and restoration of selected historical buildings were to be carried out to transform them into a modern museum (*Schindler's Ark Saving Competition*, 2023).

Figure 2: Photographs of the buildings related to the competition[5].

Adaptive Reuse: For example, in the 2023 competition titled "Rural Housing: The Adaptive Reuse of an Italian Cascina, historical farmhouses in the Cascina Settlement in Italy were considered. These historical rural farmhouses are considered an important part of the country's rural heritage. As part of the competition, participants were expected to submit creative, new, and contemporary proposals for the interior design and landscape integration of these buildings to transform them into modern homes. The competition not only aimed to promote more sustainable architecture through the reuse of existing structures and materials but should also be seen as an opportunity to preserve the unique character and heritage values of a place and contribute to its architecture (Rural Housing: The Adaptive Reuse of an Italian Cascina, 2023a).

[4] The photographs are included in the competition rules book (Reinterpreting the Space, 2023).
[5] The photographs are included in the competition rules book (*Schindler's Ark Saving Competition*, 2023).

Figure 3: Cascina Rural Houses[6].

Renewal: An example of this is the competition "Renewal of the Budapest Railway Station and its Surroundings," which opened in 2021. The Budapest Development Agency (BFK) has launched an international competition for the renewal and expansion of the Budapest Nyugati Railway Station. The competition includes challenges such as renovating Hungary's oldest and busiest railroad station, preserving its historical features, and exploiting its value (*Renewal of Nyugati Railway Station and Its Surroundings*, 2021).

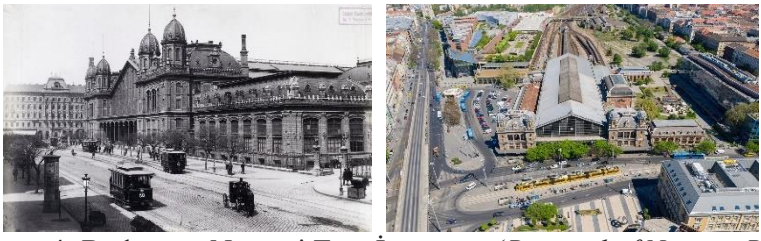


Figure 4: Budapeşte Nyugati Tren İstasyonu (*Renewal of Nyugati Railway Station and Its Surroundings*, 2021).

New Buildings in Historical Cities: In the competition "Belgorod City Center: International Competitions for the Design of an Urban Block," which opened in 2013, options for the transformation and development of the historical city center are being explored (*International Competitions for the Design of an Urban Block in the Historical Centre of Belgorod*, 2013).

THE REUSE ITALY COMPETITION and FINDINGS

This research examines in detail the "Reuse Italy" competition series to fill the identified gaps in the literature, paving the way for further research and enriching the solutions developed for the relationship between historical and new aspects of architecture. The reasons for selecting this series of competitions include the fact that it allows the research of the relationship between historical and new aspects in architectural competitions and, due to the opening of several competitions, it allows comparisons, making it possible to identify changes and developments in the competition process, evaluations, and designs. It is expected

[6] The photographs are included in the competition rules book (Rural Housing: the Adaptive Reuse of an Italian Cascina, 2023b).

that the results obtained will serve as an example for solving the challenges arising from the relationship between historical and new aspects in fields such as architecture and urban planning. It is also expected to develop the idea that project competitions can be an appropriate method to solve the identified challenges.

Reuse Italy is a project initiated by the Save the Heritage-Benefit Corporation. It conducts architectural design competitions and workshops, provides thesis support, and publishes various materials to promote the use of various ruins and historical buildings in Italy. This research evaluated the project competitions that were announced as part of the Reuse Italy project.

Reuse Italy aims to draw attention to the fact that Italy's historical buildings are being forgotten. Its main objectives include raising public awareness of the issue, organizing activities that demonstrate the feasibility of reviving ruins, and initiating regeneration processes. It is anticipated that these efforts will serve as a resource for the renewal of abandoned historical environments, and architectural projects play a fundamental role in this regard (*Reuse Italy*, 2023).

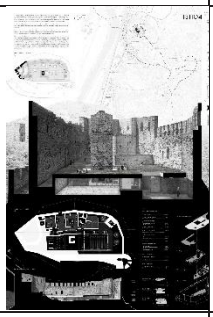
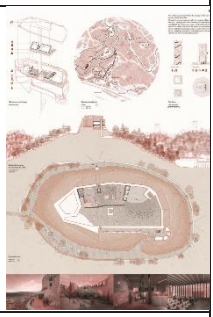
From 2019 to date, a total of 6 competitions have been organized by Reuse Italy. All these competitions focus on the reuse and revitalization of historical ruins. In this research, brief information about the competitions is given, followed by an evaluation of the first, second, and third places. Three main categories are considered in the evaluation of the competition results: proposed function, intervention decisions, and spatial analysis methods. The function category examines how the specified function is addressed and whether additional functions are supported. Intervention decisions evaluate what type of interventions are made to the organization of the specified function within the structure. The addition, subtraction, integration, and preservation subcategories are evaluated separately, taking into account preferences for contemporary or traditional materials and construction methods. Under the heading of "Spatial Analysis Methods," the interventions in the typology of the building's ground plan, the changes in the facade, and the arrangement of the interior spaces are examined.

Reuse the Castle - Ripafratta

Figure 5: Competition announcement visual in order from left to right (Reuse the Castle - Ripafratta, 2023a) and competition area (Reuse the Castle - Ripafratta, 2023b).

The competition was opened in 2019. The castle, one of the most important medieval castles in Tuscany, has been a ruin since the sixteenth century. The last renovation was carried out in 1504, probably in collaboration between Giuliano da Sangallo and Leonardo da Vinci. The main question raised by the competition is whether life can return to these medieval walls. The transformation of the structure and its surroundings is expected to include spaces for events, and conferences, public parks with walking trails, and special areas for climbing activities (Reuse Italy, 2019). The first, second, and third prizes were examined in detail in Table 1.

Table 1: Reuse the Castle – Ripafratta summary table[7].

	First Prize	Second Prize	Third Prize
Winning Team	Lucila Castañeda Aller, Valerio Giovannini	Marco Presta, Sara Spano	Filippo Bison, Enrico Berti, Anastasia Bergamo, Martina Fent
Poster and Drawings			
Function	➢ Reception ➢ Multi-purpose ares ➢ Bar/restaurant ➢ Permanent exhibition ➢ Climbing activities ➢ Services ➢ Other opened spaces (toer court, multi-purpose area green court, antique windows view green area, relax green area)	➢ Space of distribution ➢ Bar/Restaurant space for local products ➢ Museum ➢ Event space ➢ WC ➢ Looker room ➢ Climbing activities	➢ Shopping place ➢ Bar, restaurant ➢ Museum ➢ Areas for climbing activities ➢ Entertainment venue

[7] The information about the winning teams and the posters in the table comes from the competition website. (Reuse Italy, 2019).

		➢ Panoramic terrace ➢ Open museum ➢ Information point		
Intervention Decisions	Addition	+	+	+
	Liberation	-	-	-
	Reintegration	-	-	-
	Conservation	+	+	+
Spatial Analysis Methods	Plan	The lower rooms were separated by horizontal and vertical dividers. Closed space solutions were proposed throughout the area, and the upper floors of the rooms were used as open areas.	The lower rooms were separated by horizontal and vertical dividers. The interior spaces face north, while the exterior spaces face south.	The lower rooms were separated by horizontal and vertical dividers. The interior spaces face north, while the exterior spaces face south.
	Interior	The interior is divided into two interconnected volumes on three different levels. A third level was created in the inner part of the castle walls, offering opportunities for strolling and walking.	The interior is used at ground level. In the inner part of the castle walls, a second level was established, which invites to stroll and walk.	The interior is divided into three different levels that form two interconnected volumes. A third level was created in the inner part of the castle walls, offering opportunities for strolling and walking.
	Facade	No changes were proposed for the facade of the building.	No changes were proposed for the facade of the building.	No changes were proposed for the facade of the building.

Reuse the Roman Ruin - Piscina Mirabilis

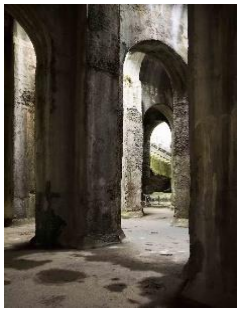
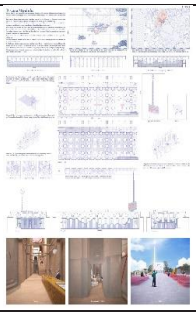
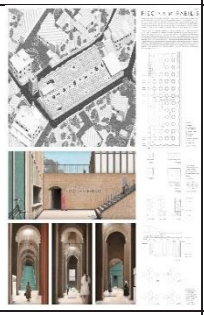



Figure 6: Competition announcement visual and competition area, from left to right (Reuse the Roman Ruin - Piscina Mirabilis, 2020).

The competition was opened in 2020. The aim is the reuse of Piscina Mirabilis in Naples. Piscina Mirabilis was built in the 1st century AD by Emperor Augustus to serve as headquarters for the Western Mediterranean war fleet and provide drinking water. The competition aims to transform the ruins into a museum of contemporary art (*Reuse The Roman Ruin - Piscina Mirabilis*, 2020). The first, second, and third prizes are listed in Table 2.

Table 2: Reuse the Roman Ruin - Piscina Mirabilis summary table[8].

	First Prize	Second Prize	Third Prize
Winning Team	Simone Baccaglini, Marco Agosti	Alessandro de Cadilhac, Lorenzo Gaveglio	Maura Pinto, Piervito Pirulli
Poster and Drawings			
Function	➢ Entrance ➢ Reception ➢ Coatroom ➢ Restrooms ➢ Permanent exhibition ➢ Temporary exhibition	➢ Entrance ➢ Lockers ➢ Introduction to Piscina Mirabilis ➢ Conference Room ➢ Restroom	➢ Exhibition space ➢ Tower ➢ Panoramic point ➢ Garden ➢ Kitchen ➢ Bar

[8] The information about the winning teams and the posters in the table comes from the competition website (*Reuse The Roman Ruin - Piscina Mirabilis*, 2020).

		➢ Storage room ➢ Bookshop ➢ Office ➢ Continuation Ornament exhibition ➢ Conference Room/Workshop ➢ Cafe	➢ Storage ➢ Temporary exhibitions ➢ Exhibition hall 1 ➢ Exhibition hall 2 ➢ Bookshop ➢ Bar/restaurant ➢ Plaza	➢ Restaurant ➢ Administration Office ➢ Exhibition terrace ➢ Restroom ➢ Bookshop ➢ Storage space ➢ Conference area ➢ Reception area
Intervention Decisions	Addition	+	+	+
	Liberation	-	-	-
	Reintegration	-	-	-
	Conservation	+	+	+
Spatial Analysis Methods	Plan	The lower rooms were separated by horizontal and vertical dividers. Light fabric covering was used as the upper structure of the room. Closed, semi-open and open-space proposals were developed. The spatial solutions extend over the entire footprint of the building.	The lower rooms were separated by horizontal and vertical dividers. Closed, semi-open and open-space proposals were developed. The spatial solutions extend over the entire footprint of the building.	The lower rooms were separated by horizontal and vertical dividers. The interior spaces are located in the north, while the open spaces face south.
	Interior	The main interior is covered only with a temporary roof, while the walls of the building are laid out on two different levels.	The main interior is not subdivided. The tower design, on the other hand, is evaluated at different levels.	The interior is organized on three different levels.
	Facade	No changes were proposed for the facade of the building.	No changes were proposed for the facade of the building.	No changes were proposed for the facade of the building.

Reuse the Fallen Church - Chiesa Diruta

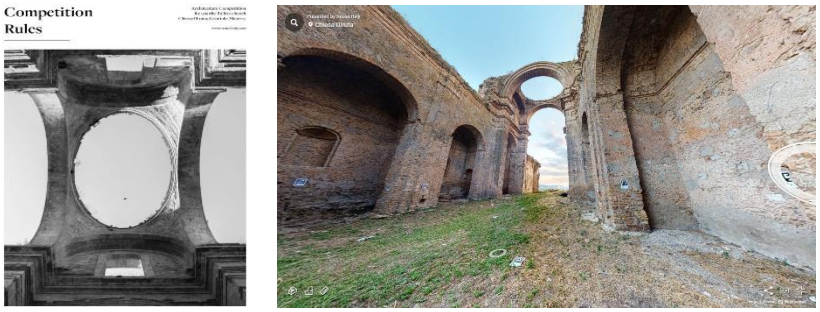
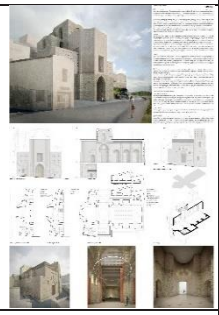
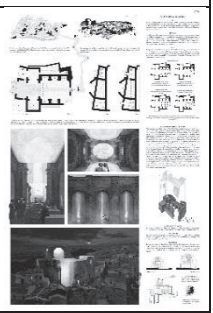


Figure 7: Competition announcement visual and competition area, from left to right (Reuse the Fallen Church - Chiesa Diruta, 2021).

The competition was opened in 2021. The building is a 15th-century Catholic church that served as a residence for the clergy and one of the most important churches in the diocese. It has suffered damage from earthquakes, fires, and other causes The aim is to transform the building into a concert hall (*Reuse the Fallen Church - Chiesa Diruta*, 2021). The first, second, and third prizes were studied in detail in Table 3.

Table 3: Reuse the Fallen Church - Chiesa Diruta summary table[9].

	First Prize	Second Prize	Third Prize
Winning Team	Andrea Romanelli, Andrea Consonni	Zsolt Frikker, Imre Bődi	Julia Giżewska, Jerzy Wojewódka, Jakub Jopek
Poster and Drawings			
Function	➢ Entrance / Ticket office ➢ Access Stairs ➢ Podium ➢ Santa Lucia Vestibule ➢ Medieval Tower ➢ Gift shop / foyer ➢ Concert hall ➢ Lecture room ➢ Stage ➢ Backstage ➢ Dressing rooms ➢ Bar ➢ Bar terrace ➢ Storage ➢ Multi-purpose space ➢ Panoramic terrace ➢ Office ➢ Upper panoramic terrace	➢ New entrance ➢ Reception ➢ Gift shop ➢ Entrance hall ➢ Administration / box office ➢ Cloakroom ➢ Storage ➢ Entrance hall ➢ Main auditorium space ➢ Stage ➢ Bsar ➢ Dressing rooms ➢ Backstage space / resting ➢ Staircase / elevator ➢ Small auditorium space ➢ Technical spaces ➢ Storage ➢	➢ Main entrance ➢ Path permeating the church ➢ Reception space ➢ Main auditorium space ➢ Grottoes of sound ➢ Stage of water and light ➢ Side stage of shadow ➢ Stage of light ➢ Outdoor stage of wind ➢ Outdoor stage of views ➢ Café/bar ➢ Tower of city's sound ➢ Backstage ➢ Additional space for artists ➢ Administration ➢ Entrance for artists, place for storing temporary elements ➢ Dressing room with private spaces, a

[9] The information about the winning teams and the posters in the table comes from the competition website (*Reuse The Fallan Church - Chiesa Diruta*, 2021).

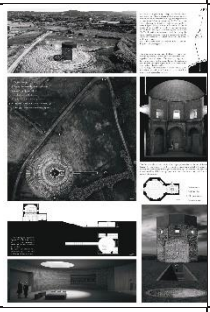
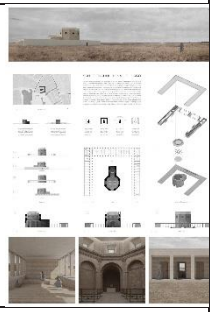
				common area and a bathroom ➢ Gift-shop point and restroom ➢ Information zone – a place to hang posters informing about events
Intervention Decisions	Addition	+	+	+
	Liberation	-	-	-
	Reintegration	-	-	-
	Conservation	+	+	+
Spatial Analysis Methods	Plan	The lower rooms were separated by horizontal and vertical dividers. Closed, semi-open and open-space proposals were developed. The spatial solutions extend over the entire footprint of the building.	The lower rooms were separated by horizontal and vertical dividers. Closed, semi-open and open-space proposals were developed. The spatial solutions extend over the entire footprint of the building.	The lower rooms were separated by horizontal and vertical dividers. Closed, semi-open and open-space proposals were developed. The spatial solutions extend over the entire footprint of the building.
	Interior	The main interior was not divided. However, the design of the tower was evaluated at different levels.	The main interior was not divided.	The main interior was not divided.
	Facade	The elements added inside the ruins are perceived, and additional elements on the facade are also perceived.	The elements added inside the ruins are perceived, and additional elements on the facade are also perceived.	The new mass inside the building leads to a change in the facade.

Reuse the Lake Chapel - San Giovanni in Val Di Lago

Figure 8: Competition announcement visual and competition area, from left to right (*Reuse the Lake Chapel - San Giovanni in Val Di Lago*, 2022).

The competition was opened in 2021. The Chapel of San Giovanni al Lago is a sixteenth-century octagonal church built on the shore of Lake Bolsena on the ruins of an ancient medieval church. The church of San Giovanni originally had a wooden roof and two small buildings on the sides, which were used as sanctuaries and retreats. It was abandoned in the early nineteenth century after the construction of the new town of San Lorenzo Nuovo. The conversion of the building into a residence for clergy and a cultural events center is expected (*Reuse the Lake Chapel - San Giovanni in Val Di Lago*, 2022). The first, second, and third prizes were studied in detail in Table 4.

Table 4: Reuse the Lake Chapel - San Giovanni in Val Dı Lago summary table[10].

		First Prize	Second Prize	Third Prize
Winning Team		Miguel Bermejo Morán, Jaime Argudín Fraile	Camilla Gemignani, Francesco Grillo	Kamil Lipski, Wojciech Pisula
Poster and Drawings				
Function		➢ Main entrance ➢ Main building ➢ Pilgrims entrance ➢ Chapel and altar	➢ Main entrance and rest ➢ Accommodation ➢ Cultural sharing space in open space ➢ chapel ➢ Common celebrations and spending time area	➢ Common hall ➢ Auditoriums ➢ Pilgrim center
Interventi on Decisions	Addition	+	+	+
	Liberation	-	-	-
	Reintegrati on	-	-	-
	Conservati on	+	+	+
Spatial Analysis Methods	Plan	The lower rooms were separated by horizontal and vertical dividers. The partition elements have been reduced to a minimum.	New structures were added.	New structures were added.
	Interior	The main volume inside remains undivided and no changes have been made.	The main volume inside remains undivided and no changes have been made.	The main volume inside remains undivided and no changes have been made.
	Facade	A roof was added.	A roof was added.	A roof was added.

[10] The information about the winning teams and the posters in the table comes from the competition website (*Reuse the Lake Chapel - San Giovanni in Val Di Lago*, 2022).

Reuse the Nymphaeum - Genazzano (Rome)

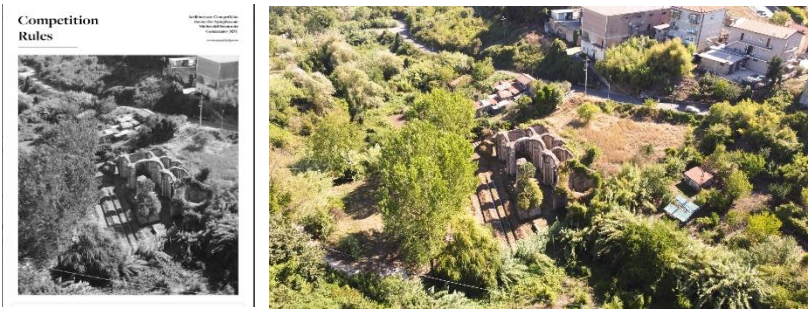
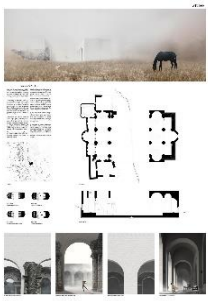


Figure 9: Competition announcement visual and competition area, from left to right (*Reuse the Nymphaeum - Genazzano (Rome)*, 2022).

The competition was opened in 2022. The building is a villa designed by Donate Bramante and built by the Colonna family in Genazzano near Rome in the early fifteenth century. It was abandoned shortly after its completion. The site and the building will be transformed into a theater and a public park. (*Reuse the Nymphaeum - Genazzano (Rome)*, 2022). The first, second, and third prizes were studied in detail in Table 5.

Table 5: Reuse the Nymphaeum – Genazzano summary table[11].

		First Prize	Second Prize	Third Prize
Winner Team		Tobias Rabold	Lorenzo Novajra, Giovanni Stoppoloni	Ana Luísa Schoenell, João Victor Ortiz
Poster and Drawings				
Function		➢ Multi-purpose hall	➢ Multi-purpose area	➢ Theater ➢ Foyer ➢ Gatherings ➢ Historical immersion ➢ Restrooms
Intervention Decisions	Addition	+	+	+
	Liberation	-	-	-
	Reintegration	+	+	-
	Conservation	+	+	-
Spatial Analysis Methods	Plan	The floor plan has been preserved in its current form.	The floor plan has been preserved in its current form. The building was extended with additions on the outside.	The lower rooms were separated by horizontal and vertical dividers.
	Interior	The main volume inside remains undivided and no changes have been made.	The main volume inside remains undivided and no changes have been made.	The main volume inside remains undivided and no changes have been made.
	Facade	In the areas where the facade has collapsed, an addition and integration has been proposed.	No changes to the existing building façade have been proposed. External additions will impact the façade.	A roof has been added.

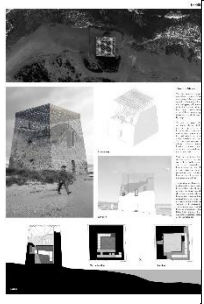
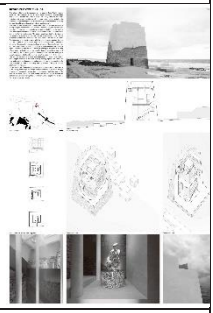
[11] The information about the winning teams and the posters in the table comes from the competition website (*Reuse the Nymphaeum - Genazzano (Rome)*, 2022).

Reuse the Tower - Torre Rinalda (Lecce)

Figure 10: Competition announcement visual and competition area, from left to right (*Reuse Teh Tower Torre Rinalda (Lecce)*, 2023).

The competition was opened in 2023. Along the coastline of the Puglia region in southern Italy, there are remains of ancient coastal towers. These towers were strategically positioned along the coast to provide information to nearby towns and villages in the event of an invasion from the sea. The structure at issue in the competition is part of this system. Built in the sixteenth century from local limestone, the tower has square bases on both sides, is more than 10 meters high, and has a sloping body. The planned transformation of the building aims to transform it into a symbolic structure and a public space. (*Reuse Teh Tower Torre Rinalda (Lecce)*, 2023). The first, second, and third prizes were studied in detail in Table 6.

Table 6: Reuse the Tower - Torre Rinalda summary table[12].

		First Prize	Second Prize	Third Prize
Winner Team		Michele Esposito Cennamo, Lukas Isak	Emine Zeytin, Gülüzar Gözay, İbrahim Özvariş	Andrea Fornaro Francesca Rossi Lucrezia Tagliabò
Poster and Drawings				
Function		➢ Informal theater	➢ Cultural activities – workshop, conversation ➢ Cultural activities – art exhibition ➢ Daily routine – Vista Point	➢ Viewpoint
Intervention Decisions	Addition	+	+	+
	Liberation	-	-	-
	Reintegration	+	-	+
	Conservation	+	+	+
Spatial Analysis Methods	Plan	Horizontal elements were added for observation purposes at different levels.	The lower rooms were separated by horizontal and vertical dividers.	Vertical circulation elements have become separating and dividing elements.
	Interior	The building was covered with a roof. The main volume remains unchanged, while horizontal elements were placed at different levels to observe activities.	The main inner volume is divided into 2 different levels.	The main inner volume is divided into 2 different levels.
	Facade	The building was completed and	The added elements have led	The proposed elements of the

[12] The information about the winning teams and the posters in the table comes from the competition website (*Reuse The Tower Torre Rinalda (Lecce)*, 2023).

		covered with a roof.	to changes in the facade of the building.	building have also been completed on the facade.

RESULTS and RECOMMENDATIONS

As a result of the research and analysis carried out, the following conclusions were drawn from the competitions held in the framework of "Reuse Italy":

- Each competition has its theme, and in the competition, projects studied, and functions were proposed that are directly related to art, culture, nature activities, and the preservation of historical buildings.
- In the projects studied, each solution has approached the theme differently. This has led to different spatial proposals, increasing the number of alternatives. The competition offers the opportunity to evaluate different alternatives for the architectural challenges of preserving a ruin or a historical site with contemporary functions and solutions.
- The additions and interventions made were not based on imitation. Instead, simple and contemporary methods were used. The competition allows for the examination of various proposals for contemporary interventions in historical buildings and promotes important discussions about the outcomes of intervention decisions.
- It is possible to compare the results of the integration method in the same structure with the results obtained by simply adding different elements. This is an important area for discussion of the results of intervention decisions.
- In most of the competitions, the existing façade remains were preserved, but the additions were designed in such a way that they can be attributed to a different era.
- In the solutions for the interiors, one can observe the differences between adding horizontal and vertical dividing elements to create lower spaces and using the space as a whole without adding elements. The different alternatives allow us to evaluate the results of the proposed additions.

The results obtained show that architectural competitions that deal with the interaction between historical and contemporary elements in areas with certain challenges, such as urban planning and architecture, are an enrichment for the alternatives generated. They provide the opportunity to compare different intervention methods, floor plan typologies, and façade choices, contributing to the resolution of problems. Soliciting architectural competitions on topics involving the interaction between historical and new elements can provide valuable alternatives and encourage the creation of environments that use contemporary, up-to-date materials and methods, benefiting researchers, architects, other relevant professionals, students, and society. For these reasons, it is recommended that in fields such as architecture and urban planning, where the interaction between historical and new elements is an issue, architectural competitions be held to create an environment that encourages participation and exchange and fosters the development of rich alternatives.

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Chapter 5

The New Name of Sustainable Cities; Eco-cities

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1. INTRODUCTION

The world is undergoing rapid change. Since the Stockholm Conference in 1972, it has taken a long time for the concept of sustainability to be perceived. Within this rapid change that the world is experiencing, the concept of sustainability is a phenomenon that is not alien to the history of settlement or urbanisation, if it is considered in the context of urbanisation and its application to cities and urbanisation.

"According to the United Nations report, the urban population, which occupies only 2 per cent of the world's land area, will overtake the rural population in this process of rapid change. The largest increase in population will be in large cities with more than 10 million inhabitants. Many studies have shown that cities are the main source of many environmental problems such as pollution and carbon dioxide emissions. In today's world, where technology is spreading and developing rapidly, effective and efficient use of energy and environmental protection have become two complementary elements. On the one hand, the risk of depletion of fossil energy resources and the high level of damage they cause to the environment, and on the other hand, the development of alternative and renewable energy resources and the expansion of their areas of application have led to the emergence of new approaches to urban planning within the framework of sustainability, environmental sensitivity and energy efficiency approaches.

Cities are geographical units that gain quality through social organisation. Although the process of urbanisation, which began 5500 years ago, has varied over time, it has taken on its current significance with the impetus of the Industrial Revolution. In the period leading up to the Industrial Revolution, the harmonious coexistence of social organisation with nature was transformed into production-oriented clusters disconnected from nature. While the qualities of cities were transformed by humans, the transformed cities began to affect humans. The negative effects of this level of influence, in addition to direct and indirect health problems, have triggered the gradual alienation of people from nature. Today, "development policy is the most effective policy in the world. From this point of view, in both developed and developing countries, priority activities are compatible with development policies in economic terms. Wetlands, ecosystems with biological richness, are used as application areas of these activities to create areas such as energy production areas, industrial areas, settlement areas, etc., but over time, production-oriented policies have reached a level that threatens the continuity of the system, and in these areas extinctions have begun that will lead to imbalances in the ecological cycle and drag people into a vicious circle. As a result of this unfavourable situation, solutions have

been sought against the industrial cities that have begun to threaten the continuity of the system. This search for solutions is based on the idea of both improving the quality of the environment and preventing the social deterioration that results from their interaction. It is believed that this deterioration can be prevented by building planned, organised and nature-friendly cities. Ecological cities are an important opportunity for this radical change and permanent solution (Kışlalıoğlu and Berkes 2001; Erçoşkun and Karaaslan 2009; Georgiadou, 2010; Kaplan et.al, 2015; Mossad et.all, 2018; Aydemir et.al, 2022).

To protect the rest of nature and improve the quality of life in developing countries, we need to build 'green' cities that produce what they consume. The use and exploitation of renewable energy resources within urban planning strategies is no longer a dream but has entered the implementation phase. When the reflection of the latest developments in technology and science on the city on a sectoral basis is combined with ecology, the phenomenon of the eco-city has emerged.

We can define eco-city as an approach to urban design and implementation where the sustainability of cities is at the forefront and where people, cities and the environment are treated in interaction and relationship with each other. Eco-city design is based on principles such as reducing the city's impact on the environment, using renewable energy sources, minimising waste production and using recyclable materials. Based on this understanding, everything that is or will be needed in urban life, from the largest to the smallest need, needs to be rethought within the eco-city order and placed in its place within the whole. There are four elements that are expressed in all studies on eco-cities. These are keeping the soil alive, keeping the water alive, keeping the air alive and keeping the heat under control. "If these four elements survive, so will those who sustain them. If they all live, so does man".

Eco-cities are closed systems with ecological planning. In eco-city applications, electricity, energy, car use and technology used in daily life are minimised to the lowest possible level and social communities intertwined with nature and agriculture come to the fore. The eco-city of the future, in harmony with nature, is economically efficient and when advanced technology in social harmony is added, an alternative urban approach emerges as a new and sustainable urban vision. While in the 20th century there were separate technologies for the transfer of knowledge and information in sustainable urban development, in the 21st century urban ecological development has become feasible with the integration of these technologies. With such an understanding, while the urban economy becomes efficient, a highly knowledgeable and

networked society emerges, and the management of urban resources improves. Today, models/rules for sustainable cities have been developed, such as garden cities with many open and green spaces, energy-efficient cities using alternative energy sources in buildings, urban services and transport. The most prominent common results of these models are that the city is compact and has more green areas. In the 21st century, for a city to be sustainable, it is not enough that it is 'integrated' and has green spaces, it must also be 'smart'. The solution is ecological and technological urban planning/design (Erçoşkun and Karaaslan 2009).

Dongtan in China and Sociopolis in Spain, designed for this purpose, are attracting attention as eco-city models. In these designed cities, the eco-city model is based on the 'city for people, not for cars' approach. The longevity of the city is linked to its ability to solve its own sustainability naturally. The core of sustainable urbanisation and eco-city concepts and practices is not spatial design, but mental design.

In this study, the concept of sustainability and the urbanisation process, new approaches in urban planning, eco-city planning and design, which is one of the ecological approaches for sustainable cities, are briefly mentioned conceptually. In this context, the content and necessity of eco-city planning and design and examples from foreign experiences are examined and evaluated.

1.1. New Approaches To Sustainable Cities

With rapid population growth and the development of technology and industry, human pressure on ecosystems is increasing and the natural environment is gradually disappearing. In this global ecological crisis, cities are seen as the main source of pollution and depletion of key resources. But cities are also the solution. For so many of their inhabitants, cities are places to live. At the same time, cities are productive systems that support this population at technologically, intellectually and socially satisfactory levels. At the same time, cities are at the centre of the world's rapid population growth. As a result of this increase, the rate of consumption increases in direct proportion and, especially in megacities, the balance between inputs and outputs within the system gradually deteriorates, leading to irreversible environmental impacts and ecological destruction. For this reason, the search for ways to deal with megacities according to ecological principles has begun (Şen 2007; Arıcıoğlu 2008; Şevki 2009; Varol and Ercoşkun 2009; Kaya and Susan 2020).

The search for ecologically based solutions for cities has been repeatedly addressed by different professional disciplines with the ecological sensitivity that has been increasing since the 1970s. In this context, ecological planning,

which is an approach that aims to evaluate the natural environment in the most beneficial way for present and future generations in the field of urban planning, in order to protect, develop and ensure the sustainability of related resources, has emerged as an important solution tool (Şevki 2009).

If we look at today's approaches, we can say that either visuality is in the foreground or they focus only on land use. In both approaches, thermodynamic laws and ecology are ignored and sustainability is seen as an insurmountable situation. What should be considered for cities is to develop design approaches that mimic natural processes and create an artificial ecosystem within the carrying capacity that feeds the existing ecosystem. The concept of the eco-city has emerged, with dense but low-rise construction, narrow streets and avenues that do not require car traffic, wide sidewalks that prioritise bicycle and pedestrian use, and systems that enable recycling of everything from wastewater to packaging nylons (Arıcıoğlu 2008; Varol and Ercoşkun 2009; Tosun 2017).

1.2. New Name For Cities İn Ecological Approaches "Eco-City

Our world is facing threats such as global climate change, rapid population growth and consequent depletion of natural energy resources, pollution and deforestation. As a result of global climate change, effects such as droughts, major floods, record snowfalls, etc. have begun to manifest themselves quite harshly. Among the solutions to be developed in order to cope with the negative effects of these irreversible consequences, the most important is the creation of ecological and human-centred cities that are well managed through the use of technology, do not produce pollution and offer alternative energy production. In particular, the growing urban population is presented as the cause of environmental problems. In fact, it would be more accurate to say that consumption habits are formed in cities that use natural resources more than necessary and that environmental problems are formed as a result of these habits (Şevki 2009, Arıcıoğlu 2008). To solve these problems, a method such as moving the urban population to the countryside is far from being applicable. In order to protect nature, improve the quality of urban life and ensure sustainability, cities need to be treated with a new understanding. This new understanding should be combined with the experience of history and shaped by an evolving ecological sensibility. Eco-cities, which have emerged with the aim of giving a new meaning to the city in an ecological sense, are a system design that brings together all the point solutions that come to mind for the city. Based on this, we can define eco-city as an urban design and implementation approach in which people, city and environment are treated in relation and interaction with each other (Çetinkaya, 2013).

Eco-cities provide a functional integrity between urban technology and nature conservation, promote new system solutions that use natural resources in the most efficient way, where social and economic factors are as important as ecological and technical factors, are accessible to major transport axes, have a balanced population structure in order to establish an urban community life, have clear objectives and programmes for the protection of natural resources in terms of water and waste water use, have functions aimed at multifaceted cultural and economic development, and at the same time be an attractive cultural, artistic and business centre, have clear objectives and programmes for the protection of natural resources in terms of water and waste water use, have functions aimed at multi-faceted cultural and economic development while being an attractive cultural, artistic and business centre, and use land in a way that ensures the functional integration of the natural and built environment (Pimental et al, 2000; Raworth, 2013; Özdemir et al, 2017; Akıncı and Pouya, 2019).

The 'eco-city' approach, in which ecological sensitivity is at the forefront, is based on two basic principles: Recycling everything possible and minimising the use of cars. This approach is based on creating living spaces in cities where energy-efficient buildings are dense, public transport is widespread, and working and living areas are close to each other (Yılmaz 2006). Thanks to this approach, the growing population of cities can be coordinated in a controlled system and transformed into buildings that can produce their own energy. In order for a city to be planned as an Eco-Cıty, it should be in harmony with the climate and the environment, prevent pollution, protect flora and fauna, prevent water, air and soil pollution, use water resources efficiently, recycle waste water, use rainwater, reduce greenhouse gas emissions, reduce the use of fossil energy, use renewable energy, reduce car traffic and recycle waste.

For example, in Melbourne, Australia, the installation of wind turbines and solar panels in residential gardens to generate energy for home use encourages the installation of rainwater collectors on roofs. In this way, 85 per cent of the energy used in the house is self-produced, and 70 per cent of the water used can be sourced. In another application in Berlin, the use of vegetable oil to heat the parliament building has reduced carbon dioxide emissions by 94 per cent. In Vienna, publicly owned bicycles are available for free use as a means of transport. Reykjavik, the capital of Iceland, is one of the pioneering cities in hydrogen-powered public transport, while in Shanghai a project to put solar panels on the roofs of 100,000 buildings is being supported by the government (Çetinkaya, 2012-2013).

Urban planning should prioritise the pedestrian scale of cities. While activities that are compatible with natural processes ensure eco-sustainability, the use of automobiles, the use of technological products, the presence of high-rise buildings, and the disregard of green spaces, which are contrary to these processes, do not correspond to the quality of an eco-city (Müller 2002).

According to a study, there is an inverse relationship between the density of the urban population and the energy consumed by car use in the city. The amount of energy consumed by transport in a city spread over a large area is higher than in dense cities built on smaller areas. As the density of the city increases, other problems related to energy imbalance arise. Dense cities create 'urban heat islands' by heating the air around them. Surfaces such as stone, brick and asphalt absorb more solar energy than natural things such as grass, water or trees, but reflect less, raising night-time temperatures. Vehicles with air conditioning or electronic devices also give off heat, but tall buildings block the wind so the heat cannot dissipate. As a result, cities are about 1ºC warmer during the day and 5-6ºC warmer at night than the countryside. In addition to this temperature difference, the energy consumed by using air conditioning on a hot day is much higher than the energy consumed by any other daily activity (Yılmaz 2006).

1.3. Ecologically Based Cities In The World

This section provides examples of sustainable urban planning/design, some built and some ecological, where Ecocity principles are applied.

Eco-Viikki

Eco-Viikki is part of a techno-city designed to serve the periphery of a large city close to Helsinki, the capital of Finland, one of the most developed countries in Europe. The aim is for all residents of Waitakere in New Zealand to understand, access, participate in and benefit from Information and Communication Technologies (ICT) and to use these technologies for environmentally sustainable work and quality of life. In this image of the ecotek site at Waitakere-Earthsong, integrated rooftop solar panels, pedestrian walkways, edible landscaping, and personal and communal permaculture gardens stand out. Eco-Viikki, which is one of the best examples of the trilogy of university, technopark and ecological residential area, is an exemplary settlement based on ecology and technology, where science-industry is located with its advantages such as geographical location, natural beauties and easy accessibility; it is a candidate to be a strong development area of Helsinki in

business, arts, science and education (Erçoşkun and Karaaslan, 2009; URL-1/2, 10.08.2023).

Bo01

The example of 'Bo01', part of the city of Malmö in Sweden, one of the Scandinavian countries, is the most important example of sustainable settlement in Europe. The European Housing Fair was held for the first time on 17 May 2001 in Malmö, Sweden, with the aim of solving the environmental problems of cities for a sustainable future. The Bo01 district, built parallel to the West Harbour in the centre of Malmö, was built by various urban planners and architects for an ecologically sustainable information and welfare society with the content 'City of the Future' and was open to visitors until September 2001. Today it is still a residential area where ecological education and courses are held. The juxtaposition of buildings built as a result of different architectural competitions, architectural form, order, variety and colour, green roofs and the relationship of the design to the sea and the canal can be seen. Bo01 is an example of a part of the city that is not only ecological but also has a technological dimension and is the most sustainable example in Europe. Technology is used for ecological purposes and the quality of life in the city is improved (Hancock 2001; URL-1/2, 10.08.2023).

Figure 1: Eco-Viikki- Bo01 (URL-3/4/5, 20.08.2023)

Dongtan City

The city, to be built in Dongtan City on Chong-ming Island, just outside Shanghai, China, at the mouth of the Yangzi River, will increase the city's biodiversity, power its buildings, infrastructure and transport needs entirely from renewable energy, be self-sufficient in energy and water, and produce zero carbon emissions. At the same time, 90 per cent of the city's waste will be collected, recycled and reused. The aim is to make the city a zero-waste city over time. The settlement, to be built on Chongming Island, is already used for agriculture and is surrounded by an important bird sanctuary. It is planned that some of this agricultural land will be converted into forest, and all agriculture will be organic, with most waste being recycled. Only 40 per cent of the Dongtan site will be occupied by urban development, and measures will be taken to ensure that the natural structure of the marshes is not affected by factors such as light, noise, gas emissions and sewage flow. The design is conceived as a hybrid of traditional Chinese design and high-tech green design. Buildings with green roofs will increase insulation and water filtration, and will be potential sources of irrigation and waste recycling. All homes are planned to be within a 7-minute walk of public transport and within easy reach of social amenities such as hospitals, schools and commercial areas. It will be able to produce all its own electricity and heating from renewable sources. Energy will be generated from agricultural waste and wind turbines. Electricity and heat will be supplied by the local grid, a combined heat and power (CHP) plant using

biomass from the husks of the surrounding rice fields, a wind farm, biogas from the processing of solid waste and sewage, photovoltaic cells and micro wind turbines to be installed on buildings. Vehicles used in the city will be battery or fuel cell powered, so there will be virtually no CO2 emissions from vehicles. Organic farming will be carried out in the agricultural areas around Dongtan, and the city's food needs will be met from here. In addition to the fact that no petrol or diesel vehicles will be allowed in the city, only electric vehicles, it is planned that solar-powered water taxis and hydrogen-powered buses will provide transport in the city. Canals, lakes and marinas will criss-cross the city, diversifying transport options and providing recreational areas for residents. Visitors to the city will park their cars in the city car park, which is connected to the transport network, and enter the city by public transport (Yıldırım et al., 2011; URL-6, 10.08.2023).

Figure 2: Dongtan City (URL-7/8, 20.08.2023)

Xeritown

Located in the southeast of Dubai, one of the fastest developing countries in the world, Xeritown is a new extension of the city towards the inner desert and provides housing for approximately 7000 people. Instead of creating an artificial urban landscape, the Xeritown Master Plan is a climate-sensitive urban settlement plan designed with natural and environmental factors in mind. Xeritown, a sustainable mixed-use settlement plan, was established on an area of 59 hectares. Dubai's climate, natural landscape and environment were taken into consideration while constructing Xeritown (URL-9, 28.06.2023).

The urban masterplan consists of a series of dense urban clusters set in a unique landscaped environment. In the design, the built-up area is compacted to cover only 50% of the site as an immediate response to solar conditions to achieve a compact shaded texture. It is defined by a succession of narrow pedestrian routes and small squares. The urban fabric is divided into longitudinal islands orientated to take advantage of the prevailing winds passing through the area. By directing the cool wind from the sea between the building islands and along the longitudinal urban fabric, the hot winds from the desert are deflected over the buildings. Thus, natural ventilation is provided, enhanced by a rugged silhouette that directs air flows at the scale of both low-rise buildings and towers. This similar dynamic structure was planned considering the formation of sand dunes in the desert. The resulting landscape is one of the strongest assets of the design. The landscape design preserves damp spots through the careful positioning of the islands. Designed as a series of humid zones in an arid environment, zones for plants and animals based on existing biodiversity have been created. The focal point of the design is the boundary between the urban fabric and the landscape. This is a system where architecture, infrastructure and landscape come together to create a balanced system against intense human activity. Here people can walk under a shady arcade looking at the shops or stroll along the promenade taking in the view. An urban promenade surrounding and connecting the clusters. It connects the urban café, restaurant, lobby and retail programme on one side of the boulevard and the landscape on the other. The urban sunshade, an elegant roof structure that can contain PV panels combined with flowing water channels, transforms the promenade into a place to stroll, sit in a café or window shop. Narrow, shaded passageways lead to the centre of the clusters, with the largest cluster leading to an open arcade. The urban fabric is made up of triplex apartment buildings, villas with Arab courtyards and apartment blocks of varying heights that form the iconic new skyline of the Paramount. Each of the plots benefits from a close relationship with the landscape thanks to an improved microclimate and spectacular views (Bolleter, 2019).

The landscape is one of the main attractions of the development, which can be explored with a jogging and cycling path running through it. Additional programmes, such as a public library, desert museum and mosque, transform Paramount into a destination in its own right, with an urban vibe, close ties to sport and characteristic local scenery. In Xeritown, some of the energy used in living spaces is generated with the help of various landscape objects. For example, the buildings are equipped with photovoltaic panels to utilise sunlight. Solar panels are also used in the shading parts of the various upper cover

elements used to shade the pedestrian paths). Thus, pedestrians are both protected from the sun and solar energy is stored. In this way, solar energy is planned to meet 10% of the housing energy need. In Xeritown, energy is saved not only through storage from the source, but also through the efficient use of existing energy. For example, low-voltage LED street lighting has been used instead of high electricity consuming lighting elements, thus reducing the consumption of electrical energy. To achieve ecological quality and energy savings, the project implements a number of strategies such as natural ventilation and earth pipes oriented to the northeast, dimmable LED street lighting, photovoltaic panels to generate low-voltage direct current electricity to reduce energy demand by minimising solar gains. There are a number of design approaches to reduce carbon emissions, including rooftop turbines, reduced demand for potable water through low water use fixtures and fittings, grey water recycling for irrigation and water efficient irrigation systems, low maintenance landscaping, resource recovery facilities through on-site soil reuse and waste recycling, easy access to public transport and an extensive shaded and well-ventilated pedestrian and cycle network. In this residential area, the architectural typology is characterised by both climatic and visual benefits, as well as a focus on resource conservation principles and a pleasant environment for social interaction (Bolleter, 2019).

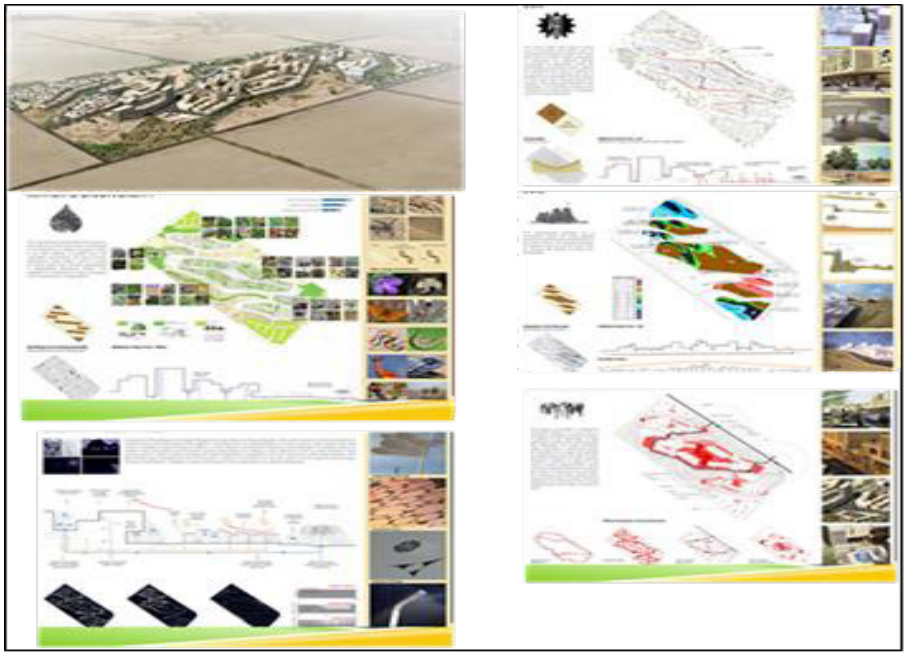

Figure 3: Xeritown, Dubai Project (URL 9/10, 28.06.2023)

Masdar City

Masdar City is built on an area of 6 square kilometres and is based on a fully sustainable environmental design. Construction of the city, 17 kilometres from Abu Dhabi, began in 2006 and is ongoing. Scheduled for completion in 2025, Masdar City will generate all of its energy from renewable sources, have zero carbon emissions, and recycle the water it uses and the waste it produces. Wastewater is used to irrigate plants in harmony with the local climate and is recycled at a high rate. In the city, buildings are designed to shade roads and other structures. This design can make a difference of up to 20oC in the temperature of Masdar City compared to the outside. The coolness of the lower layers of the ground will be used to cool the buildings. 40,000 people will live in this city, and a separate system will help save energy in every corner of the city. Projects such as the Beam Down Project, Personal Rapid Transit and Wind Tower are examples of these systems. The Beam Down Project aims to maximise the efficiency of solar energy. In this project, the sun's rays are not collected in towers as in previous systems, but in a structure with mirrors at ground level, through secondary mirrors to the main centre, where they are collected. The temperature of this centre is 700 oC, and this temperature heats the water and enables the steam turbine to turn (Erçoşkun ve Karaaslan 2009). In Masdar City, a city with zero carbon emissions, vehicles are powered by electricity instead of fossil fuels. The Personal Rapid Transit system and self-charging vehicles have reduced carbon emissions, one of the most damaging factors to the atmosphere, to zero and minimised the use of fossil fuels. The Wind Tower project in Masdar City, where the scorching heat of the desert can be felt, creates a natural air-conditioning effect by bringing the cold wind from above down to human levels on the city's streets through tall, energy-neutral towers. In addition to energy-saving projects, the largest solar panel field in the Middle East is being used to generate electricity. The field contains 88,000 solar panels and generates 10 MW of electricity. There are also solar panels on the roofs of the buildings, and with 1 MW of electricity generated from these panels, 15-20 per cent of the electricity used in the buildings is covered (URL 11, 28.06.2023).

Figure 4: Masdar City Project, (URL 11/12, 28.06.2023)

Tianjin

The Sino-Singapore Tianjin Eco-city is a joint project of the Singapore and Chinese governments. It aims to be a healthy eco-city with sustainable and innovative approaches, where the water element and green texture are emphasised in Tianjin Eco-city. The city will be built on an area of 30 km2 and will provide a living space for 350,000 people. The Tianjin Eco-City, which will accommodate a total of 350,000 residents, is divided into seven main zones ('Lifescape', 'Eco-Valley', 'Solarscape', 'Urbanscape', 'Windscape', 'Earthscape' and 'Eco-Corridors'), with a strong emphasis on the balance of valleys, walking paths and green spaces, and the residential towers rising in the middle of all this, and the characteristics of landscape design. In these zones, local areas with gradual transitions, central focal points, terraces, suspension bridges, stepped architecture, recreational activities, open green and public spaces, residential areas, multifunctional and appealing to all age groups have been created. The project aims to create a compact city with a good mix of land uses. The eco-city has been designed to increase the use of public transport by residents and workers by maximising the amount of residential, commercial and leisure space within walking distance of public transport. Each neighbourhood in the project has amenities and employment close by. Local and central facilities meet the

needs of residents. "Green transport" is an important feature of the city's transport planning. The aim is to increase the use of public transport and non-motorised modes of transport within the eco-city. For this reason, the transport network in the eco-city is planned to give priority to pedestrians, non-motorised transport and public transport vehicles, and to be easily accessible by rail systems. Once the planning and design processes have been completed in line with the eco-city, it will be actively exhibited and continue to function (URL 13, 2023).

Figure 5: Tianjin Sino-Singapore City Project, (URL 13, 2023; URL 14, 20.08.2023)

Freiburg, Vauban,

Vauban, a district of around 5000 inhabitants and 600 jobs, is located 4 km south of Freiburg city centre and symbolises a new eco-town concept. The houses in the town are built to low energy standards using solar thermal and solar panels. By covering the roofs of the buildings with solar panels, a new understanding of architecture is demonstrated. The houses, called 'Plus Energy Houses', achieve the goal of zero carbon emissions. The main logic of 'Passive Energy Houses' is that they do not need heating. With a good insulation system, 90% thermal insulation is achieved compared to other houses. Self-heating houses have been built, where the heat produced by the household and electrical appliances is prevented from going outside. Cycling and walking are the main means of transport in Vauban. The area around the river Dreisam is reserved for pedestrians and cyclists. In order to limit the use of cars in the city, the access road runs outside the neighbourhoods. Walking and cycling paths cross within

the neighbourhoods, creating social environments where different groups come together (URL 15/16 2023).

In the riverbed of the Dreisam there is a hydroelectric power station based on the Archimedes' screw principle. In this plant, the river has been lowered by 3 metres in order to obtain a power that increases more and more in each screw section by operating the 'Archimedes' screw system, which has the function of raising the water from a lower level to a higher level, in the opposite direction, and small artificial reefs for fish have been created by making sets of stones to prevent this fall from harming the fish. The traffic problem, one of the city's main sources of pollution, has been tackled with a traffic management plan and a network of cycle lanes; roads have been widened to accommodate the tram; and places where cars are the main mode of transport have been moved from the outskirts of the city to the centre, where they can be reached on foot or by bicycle. In this way, the areas outside the city have been left as green spaces. Some measures have also been taken to reduce traffic in the city. The speed limit on many streets is 30 kilometres per hour. As vehicles do not exceed walking speed, this has allowed children to play in the streets. In the Vauban district, parking spaces are located outside residential areas. People with cars have to park here. As parking is even more expensive than cars, a car-sharing system has been set up for those who do not want to buy a car. There are solar panels all over the city. The area where the city's rubbish dump is located is used as an energy production centre. The garbage is covered with sawdust to capture the methane gas. The captured gas is piped through pipes and used to heat the city. The energy needs of many families are met by solar panels installed on the slope of this unused landfill. (Fraker, 2013; Okumuş and Türkoglu 2017)

Figure 6: Freiburg, Vauban, City Project, (Fraker, 2013)

SONUÇ

Ecological approaches that are sensitive to nature aim to minimise the growth of cities and the use of energy, which is increasing at a high rate, and to fill the gaps in the system with few inputs and economic solutions through the conscious use of technology (Berkes and Kışlalıoğlu, 2010). In ecological urban planning, a holistic approach is essential in order to establish a systematic approach and find a rational solution to the problem. For this purpose, taking some measures at specific points in the city will lead the city into a vicious circle. In order to provide a lasting solution, it is possible to look at the problem from a broad perspective with the concept of the eco-city. Everything that comes to mind in urban life, from the largest to the smallest formation, needs to be rethought within the eco-city concept and placed in its place within the whole. The planning studies that will be carried out in the city in the future within the framework of the eco-city concept aim to fulfil and continue the ideals of sustainable development. While the social and economic dimension is at the centre of the planning studies, environmental issues are used as part of the process.

The eco-city approach, which puts people first, eliminates situations that cause pollution in the city, develops energy-efficient buildings, develops and prioritises public transport systems, plans residential, commercial and industrial areas to work together, emphasises local organic agriculture, and designs waste management and recycling systems, is the process of reversing the ongoing process of destroying nature and destabilising its balance.

The ecological city is a planning concept that encompasses everything from a single building material to the whole city. The choice of settlement type is also an important criterion. The climate of the region should be utilised as much as possible and its negative aspects avoided as much as possible. Another very important factor is to ensure the continuity of the existing natural life in the city. Ecological principles, i.e. ensuring natural cycles, are the starting point for planning and architectural design. These principles include the use of alternative energy in buildings (solar energy, wind energy, geothermal energy, biomass, biogas, biodiesel, etc.), the recycling of waste water, the collection and reuse of rainwater, the use of compost as fertiliser, the use of environmentally friendly materials and renewable landscape design (Eryıldız 2003; Eryıldız and Xhexhi,2012).

Today, especially in Europe, the idea of ecological cities has been adopted as a policy by some municipalities. Waste materials are used in many areas, from construction materials to playgrounds. In addition, not only the waste materials used in buildings, but also the design of the buildings are made in accordance with the understanding of the ecological city, taking into account the climatic and geographical characteristics of the region. In addition to measures to maximise light throughout the day and regulate heating in summer and winter, rainwater and solar collectors will be installed on the roofs to minimise water and electricity consumption.

While a few countries are taking a sensitive approach, it seems that it will take a long time for all countries in the world to take action and for eco-cities to become widespread. However, we should be resolute on this issue and seek solutions with the joint efforts of governments. Nature maintains its own equilibrium in the absence of human intervention. If this balance is disturbed because of personal interests and national compulsions, or because of the dream of exploiting the possibilities offered by technological progress, irreversible mistakes will inevitably be made. In this sense, cities should be seen as living spaces that develop with nature rather than against it, and eco-cities, which are the most important models of a holistic ecological approach, should be developed and implemented worldwide.

Small-scale pilot projects will be carried out abroad to build public opinion. In addition to building public opinion, it has been observed that it is easier to spread this idea by building ecological neighbourhoods and streets in newly built settlements in large cities. Based on ensuring the continuity of nature, everything from the design of buildings to the energy resources used, plant species and wildlife should be planned, and people should be introduced to an ecological understanding of life that is very close to our traditional understanding and way of life. Unfortunately, this kind of planning is not being done enough in Turkey, and climate and ecology are not being taken into account enough in the developments that are being made. All the principles of the ecological urban approach can be applied to our country, but we have to remember that we have to implement them somehow in everyday life. We all need to understand that humans are part of nature and that living together with nature is the best solution for us.

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Chapter 6

In The Following of Modern Architecture: The First Modern Hotels of Van City

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ABSTRACT

The city of Van, which has hosted many civilizations in the historical process, is one of the urban settlements where the city-human relationship is intense with its intangible and tangible heritage. Due to its location, the city has been a gateway connecting the east to Anatolia throughout history. Both commercial and cultural activities with the neighboring countries continued in every period. Thanks to the Van-Sufiyan railway line, which was put into service in 1971 and connects Turkey and Asia, commercial activity with Iran increased and relations began to accelerate by establishing the connection of the city of Van with other cities, especially Ankara. The first accommodation buildings of the city began to take their place in the urban fabric in this period as a necessity for both those coming from abroad and surrounding cities for commercial activities, and those coming from Van districts and villages. With the proclamation of the Republic, zoning movements in the city accelerated in line with the construction mobilization spreading from the center to the periphery in order to meet the changing needs of the new order. In the study, the first modern hotel examples, which are an important component of the urban fabric, were examined. It is aimed to document these structures which can be considered as qualified examples of modern architecture, which has gained a place in the memory of the city and its inhabitants, but some of them have been lost, in the context of their importance in urban settlement and their architectural features.

Keywords: Van, Hotels, Modern Archıtecture, Cumhuriyet Street

INTRODUCTION

As soon as a person starts to move from one place to another, he needs shelter, albeit temporarily. The place where the act of sheltering took place has been called by different names according to different cultures and different geographies throughout history. Today, it is seen that the words ‘hotel’ are used in common in many countries of the world. When we look at the etymological origin of the word hotel, it is seen that it is borrowed from the word 'guesthouse', evolved from the word 'hostel' in Old French, and means 'hospes', 'hospit', that is, 'hosting' in late Latin. [1] The inns, which are the first examples of accommodation structures, are encountered during the Roman Empire. In the Middle East, caravanserais are important accommodation places. [2a] In the Ottoman Empire, it is known that soldiers and civilians used the caravanserai and inns for accommodation during military campaigns. [3] In this study, it is aimed to examine the physical development of the city of Van, accommodation structures and the first hotel structures built in a modern sense. On Cumhuriyet Street, which is the important axis of the city, many public buildings as well as commercial buildings have taken their places. Due to the fact that the area described as the bazaar is jammed into this street, the accommodation buildings are concentrated in this area and associated with the urban context. While it is seen that some of these buildings, which are important examples of modern architectural heritage in the city of Van, have been destroyed, it is aimed to document the ones that have survived to the present day and to transfer them to future generations by preserving them. Although there is no study in the literature for all the accommodation structures in the city or for a single hotel, the resources are limited, it shows that there is a need for a study in which the first modern hotel structures are documented in line with oral and written sources. It is seen that an understanding for the protection of modern architectural products, which started with the Early Republic and was built until recently, has not developed in Turkey. The structures built in these periods throughout Turkey are being demolished or faced with the threat of demolition day by day. There is no social reaction, in this situation, where a legal basis cannot be established or insufficient, the documentation and protection of modern architectural architecture becomes an important issue. [4] While discussing which periods the modern heritage covers, in some countries 50 or 30 years are taken as a basis, while in some countries more recent buildings are registered. [5] In the city of Van, where examples of modern architectural heritage are few in number, the destruction of unregistered and few buildings comes to the fore from time to time. In this context, the study examines the modern architectural heritage in Van through Bayram, Beşkardeşler and Büyük

Urartu Hotels, which have a large share in the development of the city. Interviews were made with the citizens of the lost buildings, and an evaluation was made on the photographs that could be found and the documents that could be accessed. It seems important to document both these demolished buildings and the last few surviving hotel examples, as they are qualified structures that reflect social memory, cultural value and the architectural understanding of the period in which they were built. It is expected that the determinations made about these structures, which are the important representatives of a period, will contribute to the conservation of the modern architectural heritage in the city of Van.

Physical Development of the City of Van and Accomodation Structures

Located on the shores of Lake Van which is the largest closed basin in Anatolia, Van is located in eastern Turkey on the border with Iran. The city, which has a special place with its culture, history and nature, is surrounded by Ağrı in the north, Bitlis in the west, Siirt in the southwest, Hakkari in the south and Iran in the east. [6] Archaeological researches date the city of Van to BC. It dates back to 5000-3000 years. In the historical process, Hurrians, Urartians, Medes, Persians, Sassanids, Byzantines, Umayyad and Abbasids, Armenians, Great Seljuks, Ayyubids, Karakoyunlus, Akkoyunlus, Ottomans and Russians reigned the city. [7] The commercial activities have continued with the settlement in the immediate vicinity of the city, whivh has been an important settlement throughout history, and the neigboring countries. The Van-Sufian railway line, which was put into use in the second half of the 20th century, is one of the important corridors that strengthens Turkey's land connection with Asia. It is possible to say that the commercial activity and tourist density in the city has increased with this railway. The city of Van is one of the settlements that could not preserve its old urban/architectural texture as it was subjected to great destruction during the First World War. The city center was re-established in 1918 by moving to the area where the vineyards and gardens are located, eight kilometers away from the thousands of years old settlement. The first zoning plan of the new settlement was made by Asım Kömürcüoğlu in 1946. [8] Starting from this date, partial and limited modern spatial interventions have been made in the city [8] Starting from this date, partial and limited modern spatial interventions have been made in the city. Architecturally the first modern applications in the city began in the Early Republican Period. The first modern application examples are educational buildings (Atatürk High School, Male Art Institute Building, Girls Institute etc.) and public (government mansion, Tekel building, municipality building, post office building, etc.)

buildings. It is observed that the new buildings differ from the traditional urban texture in terms of building masses, spatial arrangements, facade formations and monumental appearances. [9] In this context, it can be said that the zoning plan, individual structures added to the city, wide streets opened for the development of the transportation system and the urban landscape are important interventions that change and transform the urban fabric. A commercial axis has been created along Cumhuriyet Street, which forms the main spine of the city, and the citizens and people from neighboring provinces have used this axis intensively. The center of the city (the 'bazaar' from past to present) has a plan that develops over this street. The most important official public institutions of the city such as the government house, Beşyol Square, municipality building, monopoly building, customs building, central bank building, state and private bank branches were also built on this axis. These modern spatial construction activities in Van, which was a small scale provincial city in this period, can also be interpreted as an indication that the city was shaped in line with the national and central ideals of the period. Although the city center showed a rapid development especially with the immigration wave after 1950, it is observed that the city is again stuck in Cumhuriyet Caddesi and the streets connected to the avenue. It is seen that the buildings built in the city starting from the Early Republic period started to collapse after the 2000s and high-rise buildings incompatible with the environment were built in their place. Hotel buildings are urban spaces located at the intersection of public and private, where social interaction and human relations are experienced. Since the first quarter of the 20th century, accommodation structures in the city of Van have taken their place on the Cumhuriyet Caddesi axis. It is known that people coming from both Van's districts and neighboring countries, provinces and districts for trade, especially on these dates, needed accommodation. These accommodation structures have been used extensively, affecting the physical development of the city. Within the scope of the study, some of the accommodation structures in the city center were determined starting from these dates. It is observed that these identified structures consisted of accommodation units consisting of a few rooms and shared spaces in the first place, and hotels with more comprehensive programs in line with the needs emerged over time. In line with the construction techniques and materials of the period, the first hotels built in the city have 2-3 floors, hipped roofs, It is observed that they are masonry structures. It is seen that reinforced concrete, high-rise, large-capacity modern hotel structures were built in the big cities of the country in the later periods. (Figure 1)

Figure 1. The first hotels of the city of Van (1: Nuh palace, 2: Murat hotel, 3: Van hotel,
4: Tourist hotel, 5: Beşkardeşler hotel)

The First Hotel Examples in the City of Van in a Modern Sense

It is thought that the first hotel examples in the world emerged in the 19th century in England. The transportation technology that has developed with the industrial revolution has affected the accommodation structures by changing the concept of travel. The arrival of the hotels in the Ottoman Empire, on the other hand, was a social, economic, political, architectural, etc. relationship between the Ottoman and European countries in the 19th century. It can be said that it is the result of close relations that started in the fields.[2b] The development in transportation technology, the search for new markets for industrial products, increasing trade and diplomatic relations between countries, tourism, etc. these reasons paved the way for the increase of interest in many Ottoman cities, especially Istanbul, and the realization of travels from Europe. In this direction, world-class accommodation units suitable for modern life began to be built in the Ottoman geography. [10] The modernization process, which started from the late Ottoman Empire and continued with the Republic, caused a transformation in the social structure and urban space. It is known that private buildings such as commercial and residential buildings, especially public buildings, are also affected by this change. In the context of the modernization

process, accommodation structures were also reshaped in line with the needs of the day. Especially as a result of the commercial relations developed with Europe, Istanbul, Bursa, Izmir etc. While the transformation process is more evident in port cities, it is observed that the transformation is limited in Anatolian cities. [11] As an Anatolian city, the physical space of Van has been subject to partial interventions starting from the Early Republican Period. During this period, military, official, health and education buildings were built in the city center. It is seen that the construction of modern accommodation structures has accelerated in connection with the increasing tourism and trade potential since the 1950s. In this context, the first modern high-rise hotels in the city of Van were opened on Cumhuriyet Street, which is an important axis of the city. The location of the hotels is one of the important factors affecting the quality and spatial organization of the hotel. For example, it is extremely important that tourism accommodation hotels are close to the squares and parks, which are the important points of the cities. [12] It is seen that the hotel buildings built in the city of Van are located in the center of the city. The surviving structures of these buildings, which have the modern materials and construction techniques of the period in which they were built, still draw attention with their qualified stance in the existing building stock. The majority of the hotels were built with a reinforced concrete construction system, and the effects of modern architecture dominate the mass-ratio relationship and facade layouts. Divan Hotel, Nuh Palace, Soydan Palace, Touristic Hotel, Yıldız Palace, Bayram Hotel, Beşkardeşler Hotel, Göl Palas, Murat Hotel, Van Hotel, Ferah Hotel, Güneş Palace, Akdamar Hotel, Great Urartu Hotel were built in line with the architectural understanding of the period. have undergone processes. Hotels differ in architectural terms according to the zoning status of the building block they are built, the services they offer and the customer base they serve. Since the majority of the examined hotels are located in the city center, neighboring parcels are structures that are bordered by streets and/or avenues and designed as adjacent structures. Considering that the city of Van had the appearance of a small town in the 1950-1970 period, it is possible to say that these modern hotels are at the standards of hotels in big cities, in terms of both the physical size of the hotel and the customer base, as well as the accommodation structures consisting of a few common volumes and rooms. Unfortunately, most of these hotels have not survived or their plan schemes, facades and many architectural features have been changed to meet the needs of the period. In the study, Bayram, Beşkardeşler and Büyük Urartu Hotels, which stand out among these hotels, will be emphasized. (Figure 2)

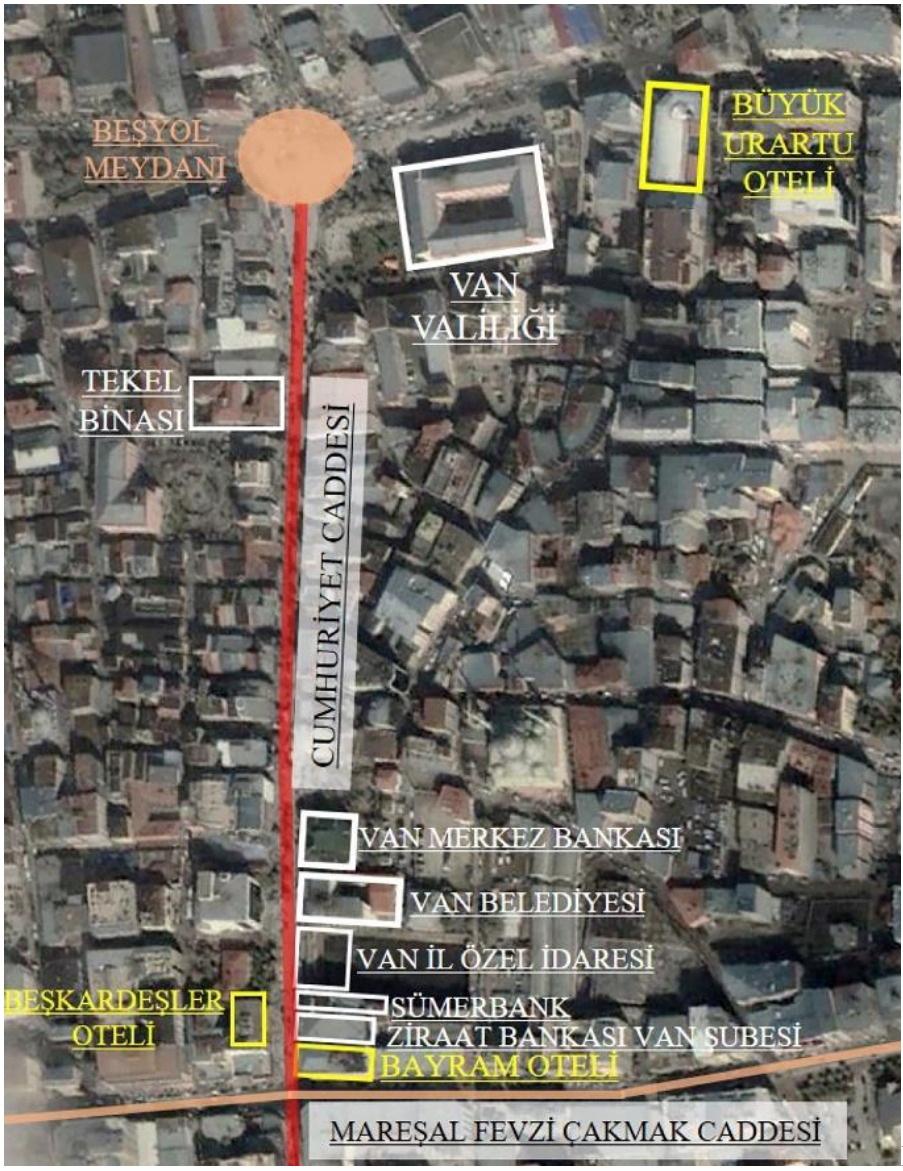

Figure 2. Location of the hotels in the city center

Bayram Hotel (1967)

In the 1950s, when the city center of Van began to take shape along the Cumhuriyet Avenue axis, many public buildings, commercial buildings and accommodation structures took their places on the street. The building is located at the intersection of two important main streets of the city (Cumhuriyet and Maraş Street). The hotel, which is preferred by the visitors of the city due to its central location, is one of the important images of the city of Van that has a

place in the cultural memory. Since it is close to many public institutions on Cumhuriyet Street important state people from outside the city were hosted here. Iranian Shah Rıza Pahlavi and the President of the period Cevdet Sunay, who participated in the opening of the railway network between Iran and Turkey in the 1970s, and politicians such as 9th President Süleyman Demirel, former prime minister Bülent Ecevit and Necmettin Erbakan, who came to participate in the political work in the city in the same years, visited the Bayram Hotel. was hosted in[13](Figure 3).

Figure 3. Bayram hotel (the first state of the building in the 1960s)

Bayram Hotel is one of the most important accommodation structures of the period, which contributed to the formation of the siluette of the city center of Van and the city memory, which was built with its modern architecture, unique facade concept and accommodation function. The building consists of six floors in total, including the basement. The building, designed in the form of a single rectangular prism built with a reinforced concrete frame system, shows features similar to the international style architecture of the 1950s with its flat terrace roof and white painted features. One of the narrow facades of the building, which is located in the east-west direction, faces Cumhuriyet Street in the west. On these narrow façades, vertically continuous patterned openings are used from the first floor to the top floor. These openings are design elements that naturally illuminate the floor halls by visually shielding the western sun and the neighboring building to the east. These details are important design elements that add movement to the closed facades of the building and contribute to the

aesthetics of the facade. In the first building photographs of the 1960s, on the long façade of the building on the south side, there are recessed balconies of the hotel rooms that cover the entire facade from the first floor. (Figure 4-5) Bayram Hotel has undergone many repairs and renovations over the years, which spoiled the façade. The hotel was heavily damaged in the October 23, 2011 Van earthquake, and was destroyed in the November 9, 2011 Van earthquake. Japanese aid volunteer Dr. 27 people including Atsushi Miyazaki, Doğan News Agency reporters Sabahattin Yılmaz and Cem Emir lost their lives. Dr. Atsushi Miyazaki has gained a place in the memory of the citizens and Miyazaki Grove Park was opened in his memory in Edremit district of Van. The Bayram hotel is beyond being one of the prestigious buildings of the city for years; As the symbol of the earthquake that took place on November 9, it has turned into one of the important memory places of the city.

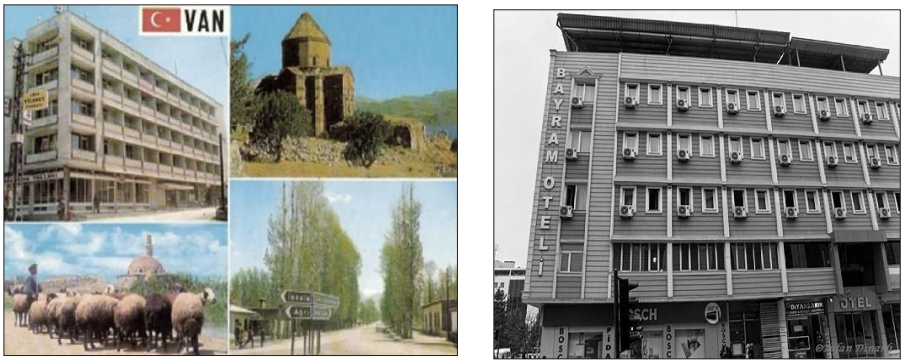

Figure 4. 5. Bayram hotel (1960s and last state before demolition)

Beşkardeşler Hotel (1960s)

Beşkardeşler Hotel is an accommodation structure located on Cumhuriyet Caddesi, which is the most important axis of the city, in line with the architectural understanding of the 1960s. Since the 1960s the hotel engraved in the city's memory, It was even featured on promotional postcards of the city of Van. It is stated that the first year of construction of the hotel (according to the information obtained from oral sources) was the beginning of the 1960s. In the city where modern architectural products are limited, Beşkardeşler Hotel draws attention with its rectangular prism-shaped mass and facade features building modern. It was built with its architectural style, unique facade concept and hotel function, the ground and basement floors are designed as shops and hotel lobby, the upper floors are designed as hotel rooms, and it consists of a total of six

floors, including the basement.The hotel is one of the points where both those who come from outside the city and stay in the city and those who live in the city meet modern life. (Figure 6-7-8)

It is seen that the hotel has almost completely lost its original structural character. The building, which is used as a hotel today, still bears the traces of the period in which it was built, despite all the changes it went through.

Figure 6. 7. 8. Beşkardeşler hotel (1960s, 1970s and current)

Great Urartian Hotel (1985)

The Great Urartu Hotel, which was put into service in 1985, is located on the east side of the Van Governor's Office at the end of Cumhuriyet Street and is the largest hotel of its time, responding to the increasing touristic needs of the city. The hotel is one of the important landmarks in the cultural memory of the city of Van. The Great Urartu Hotel structure, designed by Architect Tansu Çamlıbel, is among the important accommodation structures of Van. According to its project, the building consists of eight floors, including the basement, and an installation floor. It is the building where the installation floor was designed for the first time in Van as of the period it was built. The building, which was designed with reference to the facade of the parcel it is located on, creats a rich content in terms of functionality in the period when it was built with a reverse gable roof, emphasizing the main entrance of the building, indoor pool, commercial and hotel lobby functions on the ground floor. On the ground floor of the building, there are lobby, circulation areas, wedding hall and shops serving various needs; restaurant on the first floor; on the installation floor, an indoor pool with mechanical connection to the floor; There are accommodation units on the second, third, fourth and fifth floors. However, the fifth floor and the pool were not built in the first construction. Later, the terrace floor was added. In the first building photographs of the 1985's, the windows of the rooms are designed in the form of a half hexagon projecting from the facade, on the long facade of the building, on the entire facade starting from the second floor. The building, which was built with the accommodation function, is an important accommodation structure of the period that contributed to the formation of the urban memory. The Great Urartu Hotel has preserved its original structural

character and facade integrity, although the hotel has undergone various renovations both inside and outside in order to achieve a contemporary appearance in both its plan scheme and facade and to meet the needs of the new functions undertaken. It can be said that the building, which continues to provide accommodation services today, is one of the symbols of the city, which has survived from the 1980s and has a place in the memory of the citizens. (Figure 9-10)

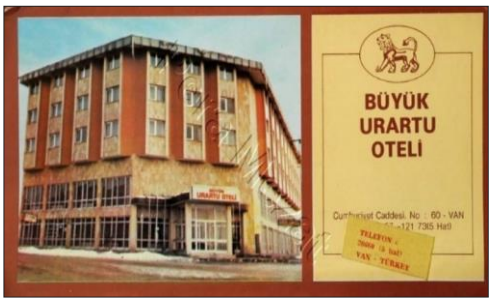

Figure 9. Great Uratian hotel 1985s
Figure 10. Current state of the Great Uratian hotel

CONCLUSIONS

Within the scope of the study, an evaluation was made on the accommodation structures of the city of Van. First of all, the physical development of the city center of Van was examined, then the accommodation structures in the city were determined from the archive records that could be accessed. Bayram, Beşkardeş and Büyük Urartu Hotels, which are important examples of modern architecture built in the 20th century and have an important place in the city's memory, have been determined as the study area. Van is an irregular and unplanned city that has been receiving intense immigration since the 1950s, with a high population growth rate. In addition to these developments in the city, the number of accommodation structures that were destroyed as a result of earthquakes and survived to the present day is very low. With this study, it is aimed to determine the structures that reflect the architectural character of a period and to ensure the continuity of the urban memory by recording them. In line with the data obtained in the research, it has been determined that most of the accommodation structures built in the city have not reached the present day. The names of the accommodation structures in the city were listed, and the projects and old photographs of three of these structures, which have archive records, were accessed and recorded. These three

buildings were primarily associated with the context in which they were located, and comments were made on the construction years, materials used, construction techniques, architectural formations, facade features and their current status. The buildings generally have five or six floors, and the ground floors are used for commercial purposes. Reinforced concrete carrier system is widely used in buildings. As a result of the demolitions in the city over the years, low-rise accommodation structures were demolished and structures with different functions were built in their place. As a result of the researches, no information about these structures could be found. Accommodation buildings are noteworthy as examples of modern architectural heritage with their stance in the existing building stock in the city and their features reflecting the architectural character of the period. Bayram Hotel, one of the three structures examined, was destroyed in the 2011 Van earthquake. It is thought that it is important to preserve the remaining two important accommodation structures and transfer them to future generations, since they reflect the period they were built, the way they were built and the architectural character of the period. It is expected to be understood that the exemplary and standing accommodation structures in the study are outstanding examples and should be preserved. It is thought that every intervention to protect the examples of modern architectural heritage is extremely important in terms of urban memory and history. In this context, it is thought that it is very important to provide urban protection with a holistic approach that will not be limited to accommodation buildings.

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Chapter 7

Regulatory Role of Architecture in Building Code Appliance: Continuing Education System and Building Inspection Relation

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INTRODUCTION[1]

One of the effective coping responses to earthquake threat is holistic earthquake risk reduction (HERR). Seismic design, construction and inspection of buildings are important HERR activities that should be compatible with performance-based building production process. The Building Inspection System(BIS) aims to monitor and inspect the work of construction professionals to promote earthquake-resistant buildings as animportant pre-seismic measure. Professional architects, one of the participants of BIS, play an important role in producing earthquake-resistant buildings. Due to this view, succesful performance-based building production process is directly related to the capacity and performance of professional architect in building inspection system.

This study is investigating the capacity development of practicing architects in seismic design regarding HERR through the BIS. In this study, evolution of the inspection term and regulatory policies in the United States (U.S.) are analyzed. The analysis is structured on professional capacity development of practicing architects in building and inspection to understand the nature of and relation between inspection and training processes in the BIS. Continuing education system (CES) and training courses designed for practicing architects in the BIS is also analyzed. The information related to course design and course providers is gathered in order to evaluate to what extent practicing architects can develop capacity in the BIS and seismic design concepts through the training courses. The main focus of this survey is to understand and evaluate the BIS training course contents in the U.S. regarding seismic design concept that utilize an integrated design process, whereby architectural, constructional and structural concerns are addressed simultaneously in a defragmented way of practice from architectural design point of view. This research will be helpful to evaluate further studies related to the evolution and appliance of BIS training courses in Turkey that is seen as a problematic area in holistic earthquake risk reduction (HERR) which has difficulties to unify structure, construction, and architecture fields in building production process.

Earthquake Risks in Built Environment

As a natural hazard, It is believed that earthquakes have long been feared as one of the most terrible natural events (FEMA 2006). It is asserted that since the beginning of human history, “the sudden shaking of the earth causing destruction on structures and buildings were seen as mysterious and uncontrollable” (FEMA 2006). Developing knowledge and technology on earth and seismology science now can

[1] This study is based on the PhD Thesis titled "Architecture and disaster: A holistic and risk-based building inspection professional training model for practicing architects in Turkey" prepared by Ali Tolga Özden in 2013.

explain the reasons and affects of this phenomenon which is accepted as a natural process, that the earth has been producing earthquakes repeatedly from its evolution. According to Dowrick (2003: 15) an earthquake can be defined as a ground vibration caused by a sudden release of energy in the Earth's lithosphere (i.e. the crust and parts of the Earth's upper mantle). It is stated that the energy is primarily due to stresses resulting from tectonic processes where the crust interacts with the Earth's interior. More technically, by the 1967, the theory of plate techtonics was introduced which has been widely used to explain the reasons of earthquakes. Lagorio (1990: 6-7) explains this theory as the mantle, or upper crust, of the earth is in constant motion as segments of its lithosphere, referred to a "plates", slowly, continously, and individually slide over the earth's interior. Earthquake is one of the most important hazards because the sudden onset of seismic waves with little or no warning can cause devastate damage to buildings and infrastructure with a massive death toll and severe economic losses.

Wada and Mori (2008) claims that the fundamental problem in seismic building design that makes earthquake a natural phenomena is the inability to predict exactly how severe a critical earthquake will be and when it will occur. Moreover, diversified risks which have highly emergence potantial from earthquakes, which are harder to detect, more problematic, more difficult to manage and cause more anxiety (Beck 1992) indicate various uncertainties among built environment. According to Beck (1992), risks, indeed, are produced by society's and/or institutions' activities in nature and built environment. From this perspective, Gephart *et al*. (2009) asserts that "people are constantly dealing with socially, organizationally and institutionally created insecurities and uncertainties". Seismic impacts can be predicted and assessed with the help of rapidly developing science and technology, and past earthquake experiences. On the other hand, reducing losses originated from extreme events associated with diverse seismic risks is a broad and comprehensive context, and it needs thinking on a more complex system. According to Petak (2002), in this context and system, earthquake risk reduction requires managing human actions and behaviours in order to achieve an acceptable balance between community needs and natural forces which points out providing a comprehensive and holistic perspective. McEntire (2001) also indicates a need for holistic perspective of disaster without any doubt that it is an approach which considers multiple causal sources, catalytic processes and complex interactions of physical, built, technological and social systems. According to Geis (2000), in today's world everything is interconnected that means in order to deal with and understanding the nature and affects of disasters, a more holistic approach is required.

It is often very difficult avoid the adverse affects of natural hazards. On the other hand, the better way to cope with these affects can be developed by lessening

substantially their scale and severity through various strategies and actions (UNISDR 2009) such as holistic earthquake risk reduction program.

The holistic evaluation of seismic risk in urban areas help to develop more integrated risk management by the different stakeholders (Marulanda *et al*. 2009) such as building professionals in risk reduction context. Cardona (2003) stresses that; "The actions and decisions included in the definition of risk require a link between the subjective perception of risk and the scientific need for objective measurement. Due to the specialization of science, there are different views on risk. Therefore, it has been suggested that there is a need for a common language and a global or holistic risk theory... The lack of a comprehensive theory of risk in the case of disasters has at least partly contributed to the problem growing faster than solutions can be found".

The theoretical holistic assessment approaches of earthquake risk particularly for urban areas has been gaining importance among the researchers that different assessment methods and indicators from different perspectives (Carreño *et al*. 2005; Carreño *et al*. 2007) such as EDRI (Earthquake Disaster Risk Index) which represents a holistic, multidisciplinary approach to earthquake risk assessment (Davidson and Shah 1997) have been developed in the last decades.

Holistic Earthquake Risk Reduction Understanding

Holistic earthquake risk reduction (HERR) is one of the effective coping efforts to seismic events. In the United States, limiting construction in earthquake-prone areas and ensuring that structures are built in accordance with appropriate earthquake codes are recognized as regulatory actions by local governments to enhance public safety (May and Birkland 1994) can be asserted as the important part of HERR efforts. These efforts which is defined as the traditional approach to reducing losses in earthquakes are specified as to formulate building design and construction standards (Burby *et al*. 1998*a*). In addition, Burby *et al*. (1998*a*) indicates this formulation which local governments are required to implement, adopt, and than force the private sector through building codes and related plan-checking and inspection processes. The Building Inspection System (BIS), as an important member of the HERR aproach, aims to supervise and control building professionals' performances in order to promote earthquake resistant buildings. Professional architects from BIS participants play an important role in the construction of earthquake-resistant buildings.

As a building inspector, architects examine the structural integrity of a variety of structures and systems such as residential and commercial buildings within the design and construction processes. Inspectors conduct their examinations during and after the completion of the design and construction of the building. They ensure these buildings are safe, comfortable and meet the physical-social and psychologic needs

of occupants all of which can be classified under the building-performance context. Consequently, inspectors control and monitor the building professionals' efforts and capacities in terms of building regulation and code compliance. They also guide and train the building professionals about the code appliance and violation. According to May and Wood (2003), inspectors influence regulators' approach to enforcing the code and other rules by combining a formal approach of clarity of rules and expectations with a supportive approach of patience with those who do not know the rules. Warszawski *et al*. (1996) describe the general purpose of building codes and standards, which are the primary source of inspection activity to establish procedures for the design, manufacture and installation of physical objects and their components or to determine the quality and performance of their products. Furthermore, products are usually defined in terms of required physical parameters (size, weight, durability, etc.) and allowable tolerances; tested and/or trialed under various conditions, in the laboratory and/or in natural conditions (Warszawski *et al*. 1996).

Architects who have the inspection responsibility need to be equipped with necessary and satisfactory knowledge about compliance tools of codes and standards. Furthermore, inspector architect needs to have sufficient control on how regulatees understand and apply regulations in practice from architectural design and construction viewpoint.

May (2004*a*) stresses that whereas building regulations are legal means of design and construction actions which are required to sustain public safety and welfare, it is not always simple and automatic to apply them due to various reasons. It is also noted that regulators may not be aware of regulatory requirements, may not accept them, may not be able to comply with them, may find compliance too costly or may simply not care (May 2004*a*). Inspectors in general should have the adequate skill and ability to handle these obstacles. Lewis (2003) claims that building construction related to various kinds of projects continues under pressures of time due to climatic reasons such as weather conditions, or need to complete by a given date, or all of them. Furthermore, Lewis asserts that the contracts for finishing the construction on time are guaranteed by different sanctions which may result in high penalty or loss of financial incentive for the builder if be not completed on time. According to Lewis (2003), Opportunities to save time and material costs by reducing quality or quantity mean that the temptation for opportunism, shortcuts and omissions is limitless. In consequence, it is significantly important and necessary to develop and apply periodic, even constant inspection of buildings under construction. As it is cited by Lewis (2003), numerous building codes, regulations, standards and guidelines are issued in addition to or as part of the applicable standard provisions in legislation; however, without regular, strategic, deliberate and robust monitoring to ensure implementation, legislation will always be flawed. Building codes were accepted and

used to protect life and prevent total building collapse before; however today, it is believed that the primary purpose of building codes is to prevent not only loss of life but also loss of any property (Burby *et al.* 1998*a*) including non-structural parts of buildings. However, among the community and building professionals, the debate on the effectiveness of building provisions and code enforcement approach has been continuing. Although the importance of building code appliance is accepted widely, as it is claimed by May (1997), there is a conflict between the view that building codes are an important aspect of public safety and the view that state and local regulations create unnecessary costs that limit development potential.

Therefore, being an inspector requires many specifications and a well-trained background. However, the various user demands, advancing building and material technology, and changing built and natural environmental conditions force inspectors to improve their knowledge. Designing for natural and man-made hazards is also an important concept of the last decades which affects the nature of inspectors' knowledge and work capacity.

Nature of Inspection and Its Relation to Architecture

The capacity building of practicing architect is crucially important to achieve the holistic earthquake risk reduction (HERR) through the building inspection system (BIS). Continuing Education System (CES) design through the BIS for certified architects is the focul point of this study. Beside the formal training and education which is often required to become a building inspector architect, many building inspectors need education in building inspection, construction management, and/or public safety. Effectiveness of regulatory control and capacity development of practicing architects depend on not only former education and training requirements, but "building inspectors also need to have strong communication skills and understanding of technical information and building codes pertaining to structures" (URL-1).

The CES is one of the most effective ways build practicing architects' capacity in developing the HERR. However, the CES courses needed to be more effective, compatible, and integrated to improve the current building inspection approach including earthquake risk reduction programs. Therefore, firstly it is important to understand the nature of inspection and architecture relation from seismic design point of view. Following, the concepts and contents of the CES that must be mastered by practicing architects in order to receive and hold their professional licenses are analyzed and evaluated. Next section attempts to understand nature of inspection and architecture relation from a theoretical and philosophical perspective.

Theoretical background of inspection, infact, encompasses a wide range of activities and actors that arranges state and society relations from different aspects of

physical, social, cultural and economic correlations. Regulations and regulatory approaches define and determine the extent, size and appliance format of inspection activities. From the regulation point of view, MacKenzie and Lucio (2005) cites that regulations can be seen as "targeted rules" linked to a mechanism, usually a public body, designed to control (or monitor) and promote compliance (rules). As it is noted by Spence (2004), in all societies, many policies have been developed to protect people's health and safety, such as control of water and food quality, air quality, vehicle safety, etc. Hereunder, building control rules and practices defined under building regulations also "seek to regulate the construction of buildings in the interests of public health and safety" (Imrie 2004). Building regulations, as it is claimed by Imrie (2004), cover a set of technical or functional requirements that buildings must meet and the government recognizes them as basic performance standards. The built environment must also control the spread of fires in buildings, the durability of materials, the safety of structures and more through various safety-related regulations called building codes, some of which date back several centuries (Spence 2004).

Building codes have been created and used for thousands of years to control construction and protect the public, residents and property owners from injury, death and property damage or loss resulting from earthquakes, fires, floods, wind and other construction events and associated disasters (Baum 2005). Since the adoption of the first known building code, the Code of Hammurabi in ancient Babylon, the death penalty or other severe penalties were prescribed for the builder if the owner or his son died after a house collapsed to protect the public from the dangers associated with poor quality building materials and poor construction technology (Burby *et al*. 2000; Baum 2005).

Hammurabi's code can be handled as the first time that inspection theory in building production process was developed. In that example, the King Hammurabi obligated builders to construct secure buildings by putting into effect a code. He also forced them to constitute a self-inspection in their minds which made them always to remember of a serious and heavy punishment if they failed or violated the code. Controling people's behaviour by developing and applying of various inspection activities has been a concern of power and community relations for a long time in the history. Power construction in building inspection process is also a part of this paper's argument to understand the nature of inspection in which architecture practice has an important role.

By the beginning of the Industrial Revolution, production practices have changed, and more larger and extensive production technologies have entered into daily life. Foucault (1977) asserts that inspection practices have also changed with the machinery of production that became larger and more complex. This has made the

inspection more necessary and more difficult in terms of controlling the regulation and code appliances. Bounding to the shift in inspection, surveillance mechanism has become the core issue of every kind of production process. Foucault (1977) also points out that the surveillance or inspection mechanism has become an integral part of not only production process but also training and teaching practices that has become an important tool of producing modern individual and correcting his/her regulation violation. New inspection approach has been constructing a new power mechanism, power of state or institutions or individuals, that will become more efficient on building practices. As a result, modern world has been introducing a new inspection model to the modernization and rationalization of building production process.

Conceptual Relation of Panopticon and Building Inspection

Centuries after Hammurabi's code enforcement, punishment and inspection terms were used together in architecture in the 18th century. According to Chapman and Ostwald (2006), Jeremy Bentham's prison project of 1790 which was named as "Panopticon", has become an important representative in a broad sense in architectural theory as an archetypal building of the Enlightment values and the Industrial Revolution in Europe. This architectural theory of spatial design and paradigmatic shift in architectural design, closely linked to Bentham's invention of the panopticon (Chapman and Ostwald 2006), has been adopted as "a symbol of prison society, a vicious society of social systems" (Piro 2008). Chapman and Oswald (2006) asserts that "The Panopticon has become the focus of many debates about the specific relationship between architecture and broader mechanisms of spatial power. Historically, it represents an essay in Enlightenment philosophical thought and marks a paradigm shift in social reform from corporal punishment to visual control". Bemberg (2006) describes the plan of Bentham's Panopticon as a disclosure of how the authority and power of the state is used in modern society. Bemberg continues that this plan shows how discipline and punishment in general, inspection in particular are viewed during that time.

The plan of prison, Panopticon, was designed radially which made it possible to be positioned in its center by one guard who could view all prisoners (Piro 2008). According to King (2001), the architectural and structural design of this ring-shaped building gives the assistant the ability to see everything without being seen; it gives the guard the ability to organize the prison chaos by classifying and compartmentalizing the inmates; and most importantly, it gives the guard the opportunity to exercise authority over the inmates.

The Panopticon project (Figure 1) is defined by Chapman and Ostwald (2006) as follows;

"The idea of a prison was simple: a circular building where prisoners were housed around the perimeter of the building under the watchful eye of a central watchtower. Large windows in the outer wall of the prisoner cells and dark shutters around the inner tower ensured that the silhouettes of the prisoners in their cells were always illuminated, while the guards inside the tower remained invisible. This gave the prisoners the feeling that they were always being watched, even when the tower was empty. Bentham concluded that this kind of observation would be sufficient to ensure appropriate behavior among prisoners with limited or no human resources."

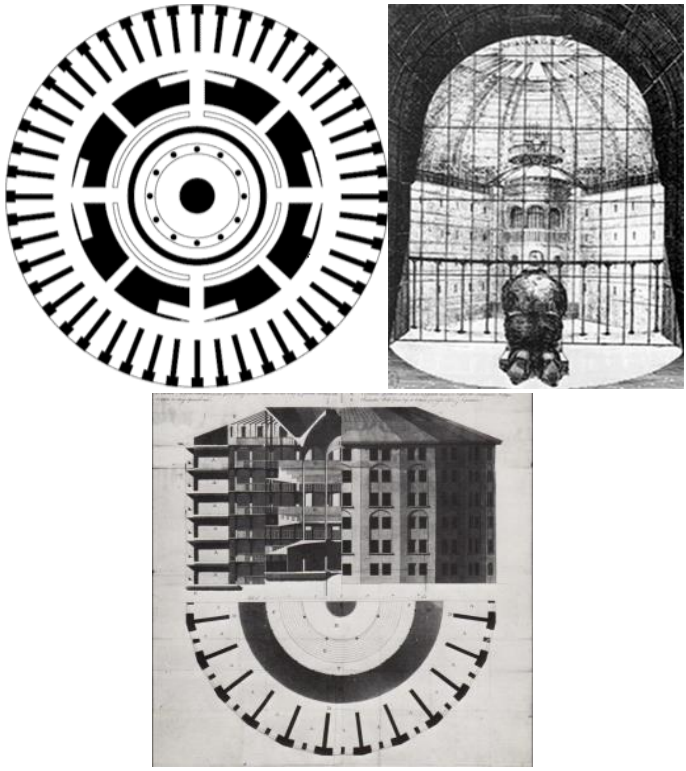

Figure 1: The Panopticon by Jeremy Bentham ; on the left-the layout, on the right-partial plan and the section, in the middle-schematic drawing of a typical cell with a praying inmate. Pictures available from;
https://www8.georgetown.edu/centers/cndls/applications/postertool/index.cfm?fuseaction=poster.display&posterID=3832 [*picture on the left*], http://www.popmatters.com/pm/feature/109955-music-scrobbling-as-a-panopticism-of-taste [*picture in the below*], http://wongturn.wordpress.com/2009/09/28/ [*picture on the right*]

Piro (2008) expresses that this prison idea as an outhgrowth of the carceral system which was created by Bentham signifies an easy and cheap way of supervision or inspection. King (2001) remarks that the most important feature

of this structural design was depending on its inspection principle which had the ability to make inmates constantly visible. Prisoners were therefore spatially separated, isolated and constantly visible in their cells, each designed for a single inmate and located on the edge of the building (King 2001). Piro (2008) also points out this specific feature of the project and cites that "the Panopticon was conceived as a form of prison architecture in which a central tower integrated into the structure provided a constant, continuous and unobstructed view of the prisoners' activities, while the inspectors could not be seen by the prisoners." (see also Ellin 2001).

Bentham, the designer of this utopic project, argued that the visibility of inspection tower but unable to see into it would force prisoners to think and believe that they were under constant inspection which made them to behave in accordance with rules and made them submissive (King 2001). Furthermore, according to Wilson (2003), Bentham proposed that such structural shielding which had a potential for constant surveillance, psychologically forced those who were inspected to exercise self-regulated behaviour. According to Bentham's own description cited by Rivas (2005): "The prison was supposed to be a circular building, or rather two buildings inside each other. The prisoners' rooms were in a six-story building. The rooms were to be open to the inside... There would be a tower in the center rotunda, a room for the inspectors, surrounded by a gallery covered with transparent cellulose. This would allow the inspectors to observe all the prisoner cells unnoticed. This building resembles a beehive whose functions can be seen from a central point..."

King (2001) asserts that the panopticon represents a new phase in inspection and discipline, and adds that although it was designed initially as a prison proposal it does not mean solely as a penal architecture. Foucault (1977: 206) points out that panopticon can be integrated into any fuction ranging from education to production. Moreover, King (2001) claims that Bentham's design should be remembered not as a prison, but as an important and valid metaphor that can be applicable to various environments today, and should not be discarded. In addition, Foucault (1977: 206) draws under the efficiency and functionality of Bentham's project; "It can enhance the impact of the (used) function in close connection with it; it can represent a mixed mechanism in which power (and knowledge) relations can be fully adapted to the processes to be monitored down to the smallest detail; it can establish a direct relationship between 'overcapacity' and 'overproduction'."

Building inspection system is a very typical example of monitoring and controling. Inspectors, forming the regulatory body of building codes, have the power to monitor and control building professionals' efforts and activities. In

today's modern world, the building inspection system indicates strong relations with panopticon theory where inspectors have seen as guards standing in the middle of a building production process and building professionals such as designers have been seen as inmates around who need to be monitored and controled because of their activities. Building production process cannot be seen as a prison and the situation is not so dramatical as in the panopticon project but here, the theoretical approach in nature of inspection can be explained from the panopticon point of view in modern world.

However, in application period of inspection with necessary appliances such as laws- regulations and codes, the inspection system is not successful everytime. May (2004*b*) claims that the location and type of building is affected by environmental and other impact assessment requirements in terms of laws and regulations, as well as codes. In addition, "building safety regulations, as well as disability regulations, energy regulations, historic preservation requirements, asbestos and lead paint removal regulations, occupational safety and housing regulations regulate various aspects of new construction and building renovation." (May 2004*b*). Not only the designers' but also the inspectors' quality and capacity as the human source of building code appliance also affect success or failure of the inspection system appliances. Insufficient number of building inspectors and inadequate training are pointed out as important reasons of inadequate enforcement (Burby *et al*. 1998*a*). Morgan and Engwall (1999: 21) claims that the adoption or application of certain operating principles cannot be guaranteed by the existence of a regulatory authority with supervisory and control powers; in most cases, it is very difficult, if not impossible, for inspectors (or regulators) to exercise detailed supervision and control over individuals and companies in general if formal rules are not integrated into the informal and corporate practices of organizations and companies.

Natural forces which have the high potential of resulting in devastating disasters such as earthquakes, have influences on reforming of inspection theory and application in last decades. Monitoring and controling of building code appliances during and after design and construction processes have become more important with the increasing frequency and expanding affects of seismic forces on human settlements in modern world. This paper traces, from architecture point of view, how does inspection of building production process need to be understood in terms of capacity building of practicing architects to reduce the seismic originated risks and to achieve holistic earthquake risk reduction approach. The following section is looking more closer to the perception of inspection practice in general and perception of architecture - inspection relation in particular in the U.S.

Monitoring Building Production Process: Codes, Inspection and Regulatory Approaches in Architecture Practice

Understanding and regulating the risks of building design and construction have been the foremost domains and responsibilities of building professionals. These are the main reasons why construction professionals have attempted to regulate risks in the design and construction process, from the first building regulations in Mesopotamia in the 1st century BC, through the Middle Ages in Europe, to the emergence of modern building control systems in the 19th century (Imrie and Street 2009*a*; Baum 2005).

Building codes can be asserted as the final product of regulatory approach for which the building professionals including architects have to comply during design and construction phases. These rules provide guidelines and educational tools for owners, professional designers, architects and licensed engineers on minimum and acceptable design criteria and construction standards (Baum 2005). According to Baum (2005), codes also "during the construction process, require contractors and subcontractors to complete the project using materials and methods that can be approved by building inspectors". From that point, Baum asserts that building codes apply to the construction, alteration, distribution, expansion, alteration, repair, use and occupancy of equipment, location, repair, depletion and demolition of any building or any building attached or attached to such building or structure. United States Department of Labor (DOL) defines building codes and standards as "the primary means of regulating building construction for public health and safety in the United States".

In the U.S., national model building and construction codes are developed and published by the International Code Council (DOL). On the other hand, many localities have additional ordinances and codes that modify or add to the National model codes (DOL).

Dorris (1998) indicates that "building codes are the product of hundreds of years of collective experience of builders and designers, both their successes and their mistakes." In addition codes are "continuously created and revised in response to specific catastrophes" (Dorris 1998). Dorris asserts that "the first building code in the United States was written two years after the Great Chicago Fire of 1875. Construction codes are developed by professional model code organizations; Its members come from the construction and design community. These are written by consensus: members and different professional groups submit their proposals and are voted on at annual conferences. As a result, rules adopted by various local governments are enforced by law to prevent the construction of unsafe buildings." Rosen (1986) depicts the evolution of building and safety codes as a problematic area which takes a long time to develop and

implement successfully. Rosen (1986: 29) exemplifies that "in the development of fire-resistant construction technologies, the challenges of carrying experimental evidence of a building material's fire resistance have been a particular burden... It took decades for architects to fully realize the fact that almost no material is completely resistant to the extreme heat generated by megacity fires.".

May *et al*. (1999) claims that state regulation of building practices relies on provisions of model codes in the U.S. It is also asserted that "in the early 20th century, building codes were developed by the private sector through an agreement process involving stakeholders that included the original building officials, contractors and design professionals" (May *et al*. 1999). The State Chamber of Commerce which is pointed out by Olson (2003) initiated work in 1928 on a recommended building code designed for California in which 100 volunteer building professionals participated. Those people who were accepted as ''highly qualified technical men'' joined to this work from northern and southern California could not complete the work until 1939, six years after the 1933 Long Beach earthquake (Olson 2003). Hamburger and Kircher (2000) state that "In 1929, the Pacific Coast Building Officers (later referred to as the International Conference of Building Officers) published the first comprehensive earthquake design procedures".[i]

Long Beach (1933) earthquake was an important breaking point, also a "window of opportunity" because there were more professionals in the U.S. than the number in 1906 San Francisco earthquake time who could talk and debate on the future seismic risks of California in particular and the U.S. in general, as well as seismic provison development. Bounding to this, as it is cited by Olson (2003); "In the aftermath of the Long Beach earthquake, seismologists, architects and engineers immediately and decisively suggested the need for more seismic safety as the main lesson of the earthquake. The government began to incorporate rules on earthquake-resistant construction into building codes". A mandatory regulation was also put into effect for the first time following the Long Beach earthquake in California which aimed to secure building resistance for earthquakes (Hamburger and Kircher 2000). In addition, the Riley act that "banned the construction of unreinforced masonry buildings statewide and established a mandatory minimum lateral force design for all buildings" and the Field Act that "established mandatory design standards, design review and construction inspection requirements for public school construction" were put into effect following the 1933 earthquake.

In 1960, SEAOC (Structural Engineers Association of California) published a book that was an expanded interpretation of an earlier report. Also known as the

'Blue Book', it provides a complete set of recommended earthquake information and supporting commentary, but more importantly it defines three vital criteria for the seismic performance of a structure. (Hamburger and Kircher 2000) (Figure 2);

Figure 2

- To permit buildings to resist minor levels of earthquake ground-shaking without damage,
- Moderate level of earthquake ground shaking without structural damage, but with some damage to nonstructural elements,
- Intense levels of ground shaking without collapse or endangerment of life safety.

It is also well known that since than, these design criterias or basic performance goals remain to nowadays that form the basic philosophy of the seismic design provisions of building codes (Hamburger and Kircher 2000).

The reform attempts to the regulation of building safety in the U.S. which have been developed by the beginning of last decade generally stemp from widely accepted of performance-based regulation approach which defends that regulations should be based on achieving specific outcomes, rather than being tied to specific technologies or specific tools (May 2004*b*)[ii]. From this view, it is asserted that "the tasks of plan examiners and inspectors range from assessing compliance with specific, traditional rules to documenting that overall compliance with expected performance has been adequately demonstrated" (May 2004*b*). In addition, this shift in law enforcement and inspector performance is leading to more excitement and better trained staff for plan examiners and inspectors. The studies and application experience of code enforcement and inspection activities have great influence on the reform of building safety regulations and building codes.

Today, there are five model codes in the U.S., each of which has a different geographical basis for adoption. These include (Figure 3);

Figure 3

- International Building Code [IBC] (used throughout the nation),
- The Standard Building Code (most widely used in the southern United States),
- The National Building Code (most widely used in states along the East Coast),
- The Uniform Building Code (most widely used in the Midwest and western states),
- A separate one- and two-family-dwelling code (used throughout the nation).

IBC has been established by the organizations that oversee the other codes in order to develop a single national model code by the year 2000.[iii]

Building supervison or inspection effort is the most important and also debatable approach in building regulation appliance of which primary target is to producing safe and healty built environment. According to May (2004*a*) one of the main mechanisms of icing that ensures the safe construction of structures is code compliance inspections carried out by responsible inspectors. Lewis (2003) proposes the purpose of building inspectors as "to ensure compliance with the requirements and norms of the building legislation in force".

Throughout history, building practices, combined with dramatic gestures of natural and mortal hazards, have developed building codes and non-regulatory apparatuses. Historically, sewing orders and artisan workshops created codes and norms to describe building and design, while during and after the European Industrial Revolution, Building Syndicates developed to perfect codes and study the building process (Baum 2005).

In the U.S., by the beginning of 20th century destructive natural disasters such as the 1906 San Francisco earthquake were the driving forces to develop and apply building codes which were evolved early in the 20th century in the U.S., by the American Insurance Association. Although 1906 earthquake was influential on building code development, it was not before the 1925 Santa Barbara earthquake that the effective earthquake resistant requirements began to be incorporated into building codes and to be put into effect (Olson 2003). However, expanding economy and growing populations have also influenced mostly the construction sector. Ben-Joseph (2009) claims that the generous financing available in the past decade has influenced not only on a great amount of construction, but also has led the consideration and speculation for new models of building and development practices. According to Ben-Joseph (2009), "many large buildings and instant communities were planned and built to a degree never seen before".

Rapidly growing cities and built environment have increased the building risks pertaining from natural or human-induced hazards. Geis (2000) claims that "disasters can affect the design (functioning, configuration, use and form) of systems and the foundations of the land built by the community (transportation/mileage structure, neighborhoods, public and private facilities, marketable development, social and open space structure, etc.) and the vulnerability of the community to the impacts of extreme natural events."

Poor code enforcement and compliance have caused tragic results such as when the skywalk in Kansas City Hyatt Regency Hotel collapsed killing 113 and injuring 200 people in 1981 (Waugh and Hy 1995). Not only the design and construction failures but also inspection failures were found strictly affective in skywalk accident. Extensive damages resulted from natural disasters also have

revealed the deficiencies in building and inspection practices. Hurricane Andrew which caused $15.4 billion in losses alone to the insurance industry could have been mitigated if building code enforcement depending particularly on building inspection efforts had been achieved adequately in 1992 (Waugh and Hy 1995). Hurricane Katrina which hit Southern U.S. in 2005 killing hundreds of people and causing a very high amount of financial losses can be given as an other example. These were but a few examples of natural and man-made disasters which were directly related to building regulatory enforcement and code appliance deficiencies. Bounding to this, due to the adverse affects of hazards and disasters, "the last decade of the 20th century saw many attempts to challenge and reshape existing frameworks of design regulations and codes" (Ben-Joseph 2009). According to Burby *et al*. (2000), to manage successful practices, it is required more sofisticated building officials who are also more highly trained and competent plan-checking and field-inspection staffs in building sector. Burby *et al*. (2000) also asserts that those staffs "have to be able not only to detect violations of the law, but also to bring about corrections of violations in ways that do not threaten the success of regulated businesses".

However, May (2004*a*) claims that there are several constraints on building professionals' compliance with building code provisions, one of which is specified as the complexity of codes. According to May, code provisions which have prepared in hundreds of pages and are often specified in technical terms cannot be easily understood. An other constraint is defined as the construction quality which mostly related to the indirect and insufficient control of builders on construction activity (May 2004*a*). This constraint is directly related to the nature of building construction which is derived from stages. Lewis (2003) summarizes these stages as follows: "...starting from the ground for foundations and drainage; progressing to the construction of the superstructures of walls, columns, floors and stairs, etc., and roofing; to the placement of secondary factors akin to window and door frames; to water power, plumbing and electrical wiring; and to coating the surface of houses for walls, ceilings and floors; and to painting". Each stage, some of which may overlap, or are arranged into substages, as different parts of buildings in order to separate programmes, is achieved by different sub-contractors (Lewis 2003). It is cited by May (2004*a*) that modern constrcution _a collaborative effort in which general contractors employ a series of subcontractors specializing in different phases of the construction process_ have deficiencies in terms of miscommunication, misunderstandings, and mistakes caused by subcontractors which often result in code deficiencies and workplace accidents. These constraints, inevitably, put more responsibility on inspectors' works.

Building inspectors are the professionals or staffs who can be defined as classic examples of the street-level bureaucrat[iv] responsible from building control and regulatory compliance (May and Wood 2003). As it is cited by McLean (2003: 18) street-level bureaucrats are "individuals in organizational roles requiring frequent and significant contacts with citizens." They are the professionals who deal with building professionals in a close touch in order to control building production process according to secure safety-health and welfare issues under the illumination of regulatory tools such as codes. United States Department of Labor (DOL) identifies the building inspectors as the professionals who examine buildings, highways and streets, sewer and water systems, dams, bridges, and other structures.

According to the DOL, nature of inspectors' work ensure that building professionals' construction, alteration, or repair complies with building codes and ordinances, zoning regulations, and contract specifications. Baum (2005) and O*NET[v] describe the responsibility and legal authority of inspectors in building process as follows (Figure 4):

- To inspect bridges, dams, highways, buildings, wiring, plumbing, electrical circuits, sewers, heating systems, and foundations during and after construction for structural quality, general safety and conformance to specifications and codes,
- To approve and sign plans that meet required specifications,
- To review and interpret plans, blueprints, site layouts, specifications, and construction methods to ensure compliance to legal requirements and safety regulations,

- To monitor installation of plumbing, wiring, equipment, and appliances to ensure that installation is performed properly and is in compliance with applicable regulations,
- To Inspect and monitor construction sites to ensure adherence to safety standards, building codes, and specifications,
- To measure dimensions and verify level, alignment, and elevation of structures and fixtures to ensure compliance to building plans and codes,

- To maintain daily logs and supplement inspection records with photographs,
- To use survey instruments, metering devices, tape measures, and test equ.pment, such as concrete strength measurers, to perform inspections,
- To train, direct and supervise other construction inspectors,

- To issue construction permits to the owner or contractor for the project if design of a new building, or modification, repair or addition to an existing building complies with all applicable building codes,
- To prohibit continuation of the construction, and/or issue fines, and/or shut down the project until the owner gains a legal permit to build if an owner proceeds without a construction permit. Inspector explain regulations and recommend rectifications for the violation notices,
- To immediately shut down construction, or delay progress until the sub-standard condition is removed or replaced if the building official inspects a project under construction that violates or does not comply with the building code,
- To withhold the occupancy permit, and again the owner may experience further delays

Figure 4

According to DOL, to monitor compliance with regulations, "inspectors make an initial inspection during the first phase of construction and follow up with further inspections throughout the construction project".

However, it is obvious that no inspection is ever exactly the same. In areas where there are high hazard risks due to severe weather, climate and/or geology— such as earthquakes, floods, land-slides or hurricanes— inspectors have to control and monitor compliance with additional safety regulations and codes designed to protect structures and occupants in case of hazardous event occurrence (DOL).

Lewis (2003) specifies the building inspection process in two period which have great contribution on achievement of building construction in progress; pre-construction activity, and during and after construction activities which are named under project management. According to this view, building inspection can be categorized as follows (Lewis, 2003) (Figure 5);

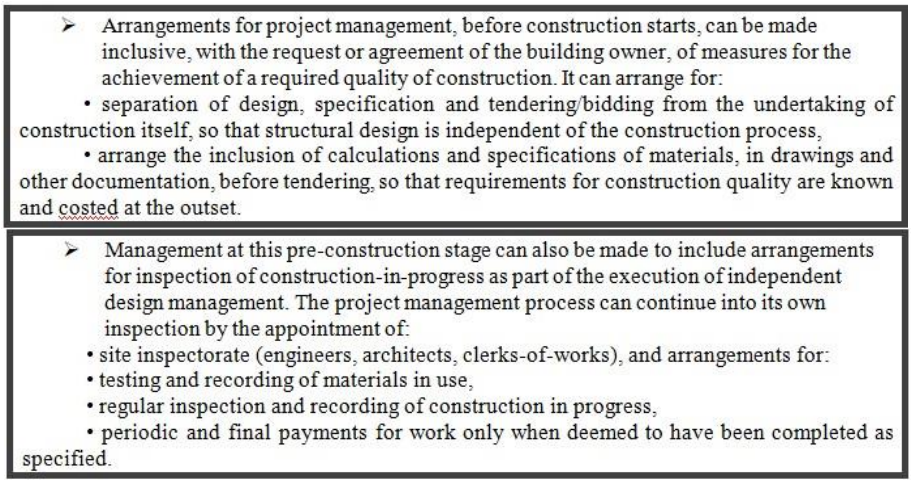

Figure 5

It is important developing and enhancing of building codes in order to create disaster-resistant built environments. However, as it is noted by Spence (2004), "the training of sufficient professionals to undertake the task of code implementation and enforcement, and the training in earthquake awareness of the builders themselves are at least as important as the improvement of codes and creation of regulations about their application and enforcement".

Form the above considerations; the next section is looking to understand capacity enhancement of practicing architects from professional training in building inspection point of view.

Building Inspection and Seismic Design Relation: Training Approach for Practicing Architects in Building Inspection System in The U.S. at a Glance

Arriving without warning, the earthquake can, in a few seconds, create a level of death and destruction that can only be equaled by the most extreme weapons of war. This uncertainty, combined with the terrifying sensation of earth movement, creates our fundamental fear of earthquakes (FEMA 2006).

Building inspection approach as an important pre-earthquake attempt aims to supervise and control building professional performance in order to promote earthquake resilient buildings. Professional architects, one of the participants of building inspection system, play important role in the production of earthquake resilient built environments. Imrie and Street (2009*a*) claims that, "the design and construction of the built environment have always been focal points of debate in relation to the risks that poorly designed buildings can pose to human health, habitation and well-being". Practicing architect's role particularly in regulatory appliance has significant importance in understanding relation between design and construction of the built environment in terms of building codes and regulations. However, as it is indicated by Imrie and Street (2009*b*) there is limited knowledge or understanding of how building professionals, such as architects, interact with and understand rules and regulations relating to the construction of the built environment and how such interactions shape different elements of the design process (see also Imrie 2007). There is too much of regulations originated from external sources which relate to building form and performance most of them emphasizing on risk identification and management (Imrie and Street 2009*a*) one of which can be considered as seismic risk.

Architects have been dealing with various design and construction contexts during building process. Inspection guide them to understand and to aware of potential risks that they may face with during design and construction period. Seismic risk is just one of those risks but not the only one. Therefore, architects need to be trained and educated related to diverse design and construction problems affecting on building form and performance. According to Carroon *et al*. (2006), building-performance requirements have been changing and they include not only health, safety, and accessibility but also aesthetics, cost effectiveness, functionality, operation, productivity, security, and sustainability contexts.

Carroon *et al*. (2006) classifies current performance criteria which can be applied to all buildings regardless of use under three broad categories: *safety, comfort, and social responsibility*. According to this classification (Carroon *et al*. 2006);

Safety concerns about fire, safe passage, emergency management, seismic protection, and construction systems,

Comfort focuses on the physical well-being of those working and living within a space and includes heating, daylight, ventilation, air-conditioning, aesthetics, and access to necessary technology,

Social responsibility is a growing field that incorporates both universal and sustainable design, as well as perimeter and interior building security. Social responsibility has catalyzed a more holistic approach to all building-performance objectives.

Practicing architects involving in building and inspection need to deal with diversified building and design risks which stem from different contexts and levels of design and construction processes mentioned above. However, architects need also to develop the knowledge of what makes a safe, comfort and social responsibility building performance. The building knowledge can be established through education, training, and experiencing. Carroon *et al*. (2006) asserts that "experience is often negative and case specific". According to this view, for example, after a fire event in which people trapped within a building new dictates are created to avoid repeating the tragedy (e.g., doors must open out of, not into, a building) (Carroon *et al*. 2006). Seismic design as a solution for preventing people and assets from seismic risks has been pointed out by authorities and scholars; as it is cited by Nordenson and Bell (2000), education of building officials and other stakeholders about seismic hazard and risk mitigation is asserted as one of the most important strategies in coping seismic risks.

During inspection process particularly in seismic design approach, deficiencies in an integrated design process, whereby architectural and structural concerns are addressed simultaneously can be asserted as a problem. Balck and Duff (1994) claim that this problem mainly stems from the modern profession of architecture which "has more or less adopted a fragmented process in which the "architecture"-the formal, functional, and programmatic issues-is tackled first, and the engineering problems are solved at a later date, usually by someone else". Homer (2006) also asserts that architects can, very often, accept structure as separate from the core values of architecture. From architect's view, structural design can be thought to be necessary only to ensure safety, not to enrich the expression of space or other architectural values, whereas from structural engineer's view the design of structure can be perceived purely from a practical viewpoint without exploring its creative potential (Homer 2006). According to Arnold (1980), during the concept design of a building, architect develops the general ideas related to building form which results in a building configuration that defines the building size and shape. This means, "as the initial configuration develops it defines the nature, size and location of the structural elements, and also includes the nature, size and location of non-structural elements that may affect structural performance" (Arnold 1980). As a result, architect

indeed determines about the seismic resistant performance of a building by the begining of the conceptual design. Architect's building form selection directly affects the seismic performance of the building. A successful building inspection training model needs to take into consideration the problem of architectural design's fragmentad process which separates seismic design and architectural design approaches.

Although experience of practicing architects is an important risk reduction effort, architects need to take into account the professional training which can be defined as the systematic acquisition of skills, rules, concepts, or attitudes that result in improved performance in another environment (Goldstein and Ford 2002:1).

Earthquake risks can be reduced through systematic efforts which aim to analyse and manage the causal factors of earthquakes, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (UNISDR 2009). Extensive damage to buildings and infrastructure during 1994 Northridge earthquake has revealed the importance of inspection and code enforcement activities. It is claimed in Burby *et al*. (1998*a*)'s study after Northridge earthquake which points out code enforcement-inspection relation with damage reduction, there is a notable effect of code enforcement effort and plan quality on the distribution of damages. Results obtained from this study strongly indicates that, "when local governments paid more attention to enforcement of the seismic provisions of the California Uniform Building Code, fewer buildings in their jurisdictions were damaged in the Northridge earthquake" (Burby *et al*. 1998*a*).

Seismic risk reduction programs in building production process encompass architectural design knowledge, engineering techniques and hazard-resistant construction approaches as well as improved environmental policies and public awareness. For achieving a successful earthquake mitigation, implementing the earthquake risk reduction programs is one of the most important concepts. Education, accreditation and training concepts are vital in improving capacity of professional architects who attempt to produce earthquake resistant buildings and resilient communities. Improving building code provisions and appliance of constant inspection under the illumination of codes help to achieve seismic risk reduction programs. Schierle (1996) recommends some important seismic risk reduction efforts to improve quality control for earthquake safety: "Building codes should require construction observation by architects or engineers, building codes should make seismic design objectives more transparent, building inspectors should focus more on items that are often missing or flawed."

Professional architects play important role in the actualization of seismic resistant building production process through the appliance of building codes and regulations.

However, the capacity of professional architects in terms of access to and implementation of knowledge about earthquake mitigation is the determinant factor for the success of the entire process. Insufficient seismic mitigation effects the efficacy and quality of building production process, and increase the vulnerability of structures and buildings. Effective earthquake mitigation can be accomplished if the certification and training model is structured in a holistic and continuous way. This recognizes a dialogue between structural and constructional as well as architectural design knowledge and specialists. In the past, when it was mentioned about seismic resistant of a building, the structural elements were identified and understood. However, today, seismic resistant or seismic performance of a building indicates great variety including life safety, functionality after seismic action, damage mitigation, etc. of which design objects are not limited to structural performance and elements but include all elements forming a building (Wada and Mori 2008).

"If you don't plan your future, don't worry - A disaster will do it for you, and you will reap the consequence" (Spangle, William & Associates, Inc., 1991).

To understand the adoption of earthquake mitigation, it is necessary to analyze the education and certification of practicing architect in the U.S. The certification and training processes of an architect have crucially important roles on the development of earthquake risk reduction and seismic design issues in practice. Not only the structural concepts but also the construction and material concepts are effective on the seismic performance of buildings. On the other hand these concepts cannot be seperated from the architectural design performance of a building. According to Homer (2006), it is not possible to separate the materiality and structure of a building from tradition in the construction industries, whether it is local or international. In addition, Homer claims that "it is also difficult to use materials without understanding their nature, and that often involves understanding their structural capacities". Thereby, architectural design and seismic design concepts are complementary subjects in building production process which are also needed to be unified from a holistic perspective in seismic design and inspection training processes of an architect. Training of professional architects in building inspection process can be asserted as a critical step in achieving seismic resistant. Burby (*et al.* 1998*b*) point out the importance of training in order to enhance supervisory and technical expertise. According to Burby (*et al.* 1998*b*), "state, local, and nonprofits' training programs can help build and disseminate knowledge on effective enforcement practices and instill a greater sense of professionalism within the code enforcement community." Heijden (2009: 108) claims that if building professionals could be trained well in building regulations their design, application, and inspection works would result in more compliance with building regulations. This view can be asserted as a common

expectation among building professionals (Heijden 2009) in general and architects in particular.

CONLUSION

It is proposed in this study that in order to built a strong capacity for coping with earthquake disaster among the design and implementation processes, practicing architects who are trained and gained awareness about the earthquake risk management approach are needed. By the leadership and contribution of the Continuing Education System (CES), the practicing architects construct the necessary capacity and knowledge in earthquake risk management system according to the changing and developing science, technology, and needs of the community and state. It is necessary to understand that; 1. The new strategy of coping with disasters (disaster risk management system) has expanding and growing influences on earthquake disaster perception and response of communities as well as professionals which support to constitute a sustainable built and natural environment, 2. As an important participant and designer in built and natural environment, practicing architects have crucially important roles in new strategy of coping with earthquake disaster, and 3. The most effective way of capacity and knowledge constructing of practicing architects in earthquake risk management system can be ensured and achieved by the implementation of CES approaches in relation to Building Inspection System (BIS) among the profession interior education which comprises a dialogue between structural/constructional systems and design formative strategies. Although this study discusses the US case, it seems essential to develop the capacities of architects with a similar approach for Turkey's fragile built environment with high earthquake risks.

Especially after the February 6, 2023 Kahramanmaraş Earthquakes, it has been seen that the building inspection system in Turkey has serious problems in terms of both legal, administrative and implementation. Likewise, it has been observed that for a holistic earthquake risk reduction approach, all parties involved in the building production process, especially architects, should take part in a very serious post-graduation continuing education system. For this reason, there is a need for continuing education models that prioritize the production of effective, multidisciplinary, risk-oriented and resilient living spaces for professionals such as professional architects.

[i] This set of procedures was proposed in the form of a nonmandatory appendix to the first edition of the Uniform Building Code (UBC). This early code included rudimentary seismic zonation, which included recognition of the effects of weak or infirm soils; simple prescriptive provisions regulating structural detailing; and a requirement to design buildings for lateral forces calculated using a base shear equation, dependent on the building's weight. These basic code elements –

zonation, detailing, and lateral resistance – remain as the foundation for seismic code provisions today (Hamburger and Kircher, 2000).

[ii] May (2004*b*), in his study, stated for the reform need and evolution in building safety regulations in the U.S. as follows: "Performance-based regulation embodies the notion that regulations should be based on achievement of specified results rather than on adherence to particular technologies or prescribed means. This approach has been widely accepted as a basis for improving social and environmental regulations and has been central to reforms of the regulation of building safety in the United States, as well as a number of other countries. Until the past decade, the regulation of building safety has developed throughout the world as one of the more rule-bound and prescriptive aspects of protective regulation. Employing a prescriptive approach, the typical building code provision addresses requirements for a component (i.e., wall, partition, and floor) in specifying required practice (i.e., nailing pattern and bolting or bracing), materials, or both. Since the initial model building code in the United States was promulgated in 1927 (the Uniform Building Code [UBC]), revisions and additions have resulted in hundreds of provisions that, as of the 1997 version of the UBC, comprised nearly a thousand pages.

Recognizing the deficiencies of the prescriptive approach and the increasing complexities of code provisions, a trickle of efforts that began in the 1970s and gathered momentum in a variety of forums since the n has led to a rethinking of the philosophy of building and fire codes. Two separate sets of developments are relevant in the United States. One was an effort undertaken by a consortium of the three national code-writing entities, creating a new entity called the International Code Council, to develop a performance-based building code. The result is a performance-based code published in December 2001 as the ICC Performance Codes for Buildings and Facilities (International Code Council, Inc. [2001]). A second effort in the United States is a competing model code that has been promulgated by the National Fire Protection Association (2002) as the NFPA 5000, Building Construction and Safety Code. Both the ICC and the NFPA performance-based code provisions are presently formulated as alternatives to existing prescriptive code provisions, which like all model codes in the United States must be adopted by states and/or localities before they come into effect. The basic approach of the performance-based codes is similar in specifying broad goals for building and fire safety, functional requirements that relate to specific aspects of the building (e.g., structural stability, fire safety, and hazardous materials), performance requirements (standards) that specify minimum requirements, designation of means for verifying building performance, and, in some instances, examples or guidelines for "acceptable solutions."

[iii] Drake and Bragagnolo (2000) clarify the different building codes used in the U.S. in different regions in terms of seismic design as follows; "Engineers and architects in the western United States are generally familiar with the allowable stress earthquake design provisions of the 1994 and earlier editions of the Uniform Building Code (UBC). At the same time, engineers and architects in other parts of the United States primarily utilize either the National Building Code, published by the Building Officials and Code Administrators International (BOCA), or the Standard Building Code (SBC), published by the Southern Building Code Congress International (SBCCI). In response to the Earthquake Hazard Reduction Act of 1977, the executive branch of the federal government created the National Earthquake Hazards Reduction Program (NEHRP). One of the goals of the NEHRP is to promote the development of seismic safety provisions suitable for use throughout the United States. This goal will be realized with the publication of the International Building Code (IBC) in the year 2000. Publication of the UBC, BOCA, and SBC model building codes will cease, and the IBC will become a single national building code."

[iv] May and Wood (2003) argue that; "Street-level bureaucrats often make choices on the spot about the best mode of action to produce a desired set of behaviors from a target individual or group. Like most street-level bureaucrats, inspectors can be alternately informative, cajoling, educating, or punitive as needed to produce the desired levels of cooperation and compliance".

[v] O*NET (The Occupational Information Network) is being developed under the sponsorship of the US Department of Labor/Employment and Training Administration (USDOL/ETA) through a grant to the North Carolina Employment Security Commission. Available from;

http://online.onetcenter.org/link/summary/47-4011.00#menu [accessed on July 2010]

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