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RE-FUNCTIONING OF HISTORICAL BUILDINGS: TOPHANE-I AMIRE BUILDING IN THE SCOPE OF DESIGN STUDIO COURSE

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ABSTRACT

Re-functioning makes it possible to preserve historical structures' continuity, one of the most important aspects of cultural heritage. The interior architect who will be involved in the re-functioning process must have the requisite training and expertise in order for the project to succeed and produce the desired results.
Design studio courses cover the majority of the information an interior architect should know about the subject of design. In this vein, the subject of re-functioning the Tophane-i Amire building as a museum was studied with the fourth-year students of Maltepe University's Department of Interior Architecture as part of the design studio course.
This theoretical study uses a phenomenological perspective and qualitative research techniques to examine the project process. The study material comprises the subject, concept, drawings, and visuals in the projects that were submitted in at the end of the term. The students' approaches and interventions to historical buildings were examined within the scope of the course and in line with their own concepts. As a result, it was seen that the students were attentive to the interventions to the historical structure by providing the restrictions and spatial construction needs determined at the beginning of the lesson in the projects.

Keywords: *Re-functioning, historic building, museum design, design studio, Tophane-i Amire.*

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1. INTRODUCTION

"*A monument is an integral part of the history it witnesses and the environment in which it is found*"

(Article 7 of the Venice Charter).

Historical buildings, which have an important place for the development of art and architecture, are among the most important elements that connect the past and the present, even if their functions vary. Historical buildings are protected differently in every country in the world.

Re-functioning, which has undergone various legal regulations until today, became legal in the Athens Charter signed in Athens in 1931, and in the Carta del Restauro in Italy in the same year. In the Venice Charter of 1964, it was suggested to protect the monuments that needed to be preserved as a historical document by using them. The concept of functional change at the international level was included in the European Convention for the Conservation of the Architectural Heritage in 1985 and in the Traditional Architectural Heritage Regulation of ICOMOS (International Council on Monuments and Sites) in 1999 (İslamoğlu, 2018, s:513). Re-functioning was applied for the first time in Türkiye after the Tanzimat Period. Topkapı Palace, which was restored and turned into a museum in 1924, is known as one of the first examples of functional changes (Satan, et al., 2018).

Historical buildings are an important reference point for the local people and are among the factors that increase the sense of security and shape the social identity of the city. For this reason, it is extremely important to protect historical buildings, which are monumental values in cities. It can be said that it is the most natural identity conservation method for the city to keep the historical buildings standing up to the present day, to protect them from extinction, and to bring them back to the modern comfort level, making the necessary functional changes and bringing them into the public's use.

Refunctioning is defined as the replacement of a structure with all necessary interventions (Brooker and Stone, 2012, s:27). Historical buildings that are functionally obsolete or cannot meet today's comfort conditions are first abandoned and then enter a rapid demolition process (Ahunbay, 2009, s:97). It is important to determine the boundaries of the interventions to be made within the scope of re-functioning in historical buildings, which emerged at this stage, and to include applications that can be made on the current situation without changing the architectural features of the building.

Tophane-i Amire building (Figure 1), which has a history of approximately 570 years and is used as an exhibition and event space under Mimar Sinan Fine Arts University, is a cultural heritage structure that has survived in many different functions. It was used as a cannon foundry, production center, barracks, warehouse, cellar and church from the date of its construction until the establishment of the Türkiye Republic.

Figure 1. Tophane-i Amire, İstanbul, Türkiye (neredekal.com, 2022)

There is a consensus that Tophane-i Amire, located in the Tophane district of Istanbul, was built by Fatih Sultan Mehmet. However, there are disagreements as to whether the structure is from the Byzantine period or not. While some researchers claim that the structure was built by Fatih Sultan Mehmet, some

researchers claim that it remained from the Byzantines and was renovated during the Fatih period (Tunç, 2014).

The larger of the two existing cannon-casting buildings dates from the mid-18th century while the smaller cannon-casting building dates from the 15th century. We come across restoration works for conservation, in the first period between 1958-1959 and in the second period between 1973-1984. Top Casting Buildings, which were donated to Mimar Sinan Fine Arts University in 1992, consist of Tophane-i Amire Culture and Art Center Five Dome Hall, Single Dome Hall and Cistern Galleries (Figure 2).

Figure 2. Tophâne-i Âmire Settlement Plan: 1- Five-domed space, 2- Single dome, 3- Cisterns (Fitöz, 2020)

Inside the large casting building, eight cut stone pillars madecarrythe top cover system which consists of five domes in the middle and five vaults on both sides. Stone lanterns, one each in the domes and two in the vaults, were built in order to discharge the hot and harmful air accumulated in the interior (Figure 3). In addition, ventilation has been strengthened with the round spaces opened in the dome pulleys. On the inner faces of the dome drums, the rows of relief columns and arches add visual richness. The transition from the dome to the arches is provided by pendentives. It is noteworthy that the tension irons in the arches are used in pairs. The interior space has been resolved as a single space due to its function. Ground floor surveys were conducted, but no definite information could be obtained. It is known that as a result of various uses, it is desired to build muhdes floors (Ceylan, 2003).

Figure 3. Tophane- i Amire Interior, columns carrying domes (Milliyet, 2021)

Tophâne-i Âmire building, which has hosted various functions with its re-functioning processes throughout history, was chosen for the Design Studio course with the idea that it may be effective in raising historical awareness among the students. In this regard, the historical structure and conservation criteria, the factors influencing the selection of appropriate functions in historical buildings, and the concept of museum and museology in re-functioned historical buildings were discussed in detail in the first weeks of the course, and students were assigned to conduct research and prepare presentations on these subjects.

1.1. Historic Building and Conservation Criteria

In order to define historical buildings, it is necessary to have information about the cultural heritage that originates from the history of societies by preserving all its features. Cultural heritage can be defined as the experiences and traditions in social life accumulated by the past generations of society and the transfer of the knowledge resulting from these to future generations. Historical buildings and textures, architectural artifacts, scientific and technological artifacts, monumental structures, and archaeological sites constitute the cultural heritage of a society.

It can be claimed that historical buildings, which are defined as "old" in colloquial language, are symbols that reflect the economic, social and cultural characteristics of the geography in which they are located, and reveal the identity of societies through their construction techniques and materials (Alpman, 2018).

Buildings/construction groups that are the symbols of cities or periods as well as the documents related to cultural values, are artifacts that should be protected owning to their characteristics. Conservation of historical buildings is necessary and important for a variety of reasons such as the cultivation of historical awareness, the continuity of historical heritage, and economic contribution.

In the Contemporary Turkish Dictionary of the Turkish Language Association, to protect is defined as "*to withhold, preserve, or warn someone or something*" (Turkish Dictionary, 2021). In the Encyclopedic Dictionary of Architecture, conservation is defined as "*taking the necessary precautions for the conservation, repair and maintenance of historical or artistic structures, natural values or parts of the city so that they can survive*" (Hasol, 2010, s:279).

The structures to be protected, their necessity and criteria have been a subject of discussion from the past to the present. According to Kuban (1970), the conservation decision of a building or building clusters is taken depending on the importance it has in terms of historical document quality and aesthetic value.

Re-functioning, which is the most preferred conservation method in historical buildings, is to reorganize the functions that have not physically expired in line with new needs (Tanrısever et al., 2016). In this way, the damage to the environment is reduced by utilizing the existing buildings and the life of the building is extended, all while contributing to the urban space and enabling future generations to benefit from the social cultural heritage.

In re-functioning studies, it is assumed that it would be appropriate to give a new function while taking into account the characteristic features of historical buildings. It is critical that it is designed in such a way that does not place more load on the structure than it can take on. At this point, before making a functional change, the boundaries of the intervention should be drawn correctly, irreversible decisions should be avoided and decision should be made by experts. It is possible to say that re-functioning, which is a method of conservation, carried out in accordance with certain criteria and principles, will contribute to society and cultural heritage.

1.2. Factors Influencing the Selection of Appropriate Functions in Historic Buildings

Historical buildings become unfit for their current functions over time due to environmental, economic, cultural and social factors. In such a case, the building can be re-functionalized, returned to the society and continued to be used. The spatial organization of the refunctionalized building is an important factor for the continuity of the building. Space organization is a concept directly related to function selection. The factors influencing the selection of appropriate functions in historical buildings affect the interventions made in the space during the re-functioning process. At this point, depending on the existing space organization and quality, re-functioning can be done by taking into account the requirements of the new function's space setup (Mazı, 2009).

In the selection of the new function in historical buildings, the location of the building, the volume dimensions, economic, social and cultural reasons, the current function of the building, legal obligations, the requirements of the space setup of the new function should be taken into consideration.

It is critical the architectural and aesthetic qualities of the building are not harmed during the functional change in the building and that it is designed to fulfill the new function by avoiding irreversible applications.

1.3. The Museum and Museology Concept in Re-functionalized Historical Buildings

There are various definitions for museums that have survived from the past to the present. The Ministry of Culture and Tourism of the Republic of Türkiye defines museums as "*science and art institutions that identify historical artifacts, reveal them with scientific methods, examine, evaluate, protect, promote, exhibit*" (KTB, 1990).

Museums, defined as institutions that preserve both natural and cultural heritage objects, provide the necessary conservation support to objects through exhibition and storage while also presenting them to the public, refer to a building that housed cultural material accessible to the public in the 19th century and most of the 20th century.

The International Council of Museums (ICOM), on the other hand, defined the definition of museum at the general assembly meeting held in Kyoto, Japan in 2019: "*Museums are democratizing, inclusive and polyphonic spaces where we can evaluate the past and the future. By recognizing and defining today's conflicts and challenges, they secure the works and (cultural) examples that they are obliged to protect on behalf of society for future generations, and provide equal rights for people from all walks of life to access (this) cultural heritage*" (ICOM, 2019).

"*According to the researches, it is accepted that collectibles dating back to the Paleolithic Age (100.000 to 40.000 BC) was born in the Near East*" (Zülfikar & Ediz, 2020). Museums can be defined as places where artifacts found in excavations, objects related to art and science, ethnological and similar objects are exhibited, stored and protected together or separately.

Museums, as a public service institution primarily concerned with objects, their exhibits and visitors, have specific responsibilities towards artfacts and society, and therefore regularly carry out multifaceted activities. Museums, which organize community service, seminars and workshops, and social aid activities in addition to their collection, storage, conservation and conservation functions, are constantly changing in terms of concept and space formation with the expectations of society and the change and development in technique/technology.

According to various sources, there are several methods for exhibiting, which is one of the museum's main functions. "*According to Belcher, who has works on museology and exhibition, while emotional, instructive and entertaining exhibition methods are applied in museums; According to Dean, object or theme-based exhibition methods are used"* (Yüksel, 2019, s:43). Apart from these, Çolak (2011, s:38) argues that three different exhibition classifications can be made according to the purpose, the relations of the objects with each other and the design.

There is another classification in addition to these. This classification is based on the types of work and collection in museums, the types of institutions to museums are affiliated with, the types of service areas, the types of functions they provide, and the types of the exhibition spaces for collections (Dıvrak, 2017, s:10).

Museums have evolved to a cultural mission, including concepts such as scientific, cultural, social, educational and behavioral. In recent years, the artistic visions and academic work of designers have developed in the field of exhibition worldwide, and many public museums have been designed and built following the style exhibited.

The museumization of traditional buildings, which has been practiced in many countries since the end of the 20th century, gained momentum in Anatolia in the 2000s. It is frequently seen on a national and international scale that historical buildings that cannot continue their original functions for different reasons are transformed into museums as exhibition objects, and that idle buildings become an economic value (Eldek Güner, 2017, s:70).

Given that the process of converting historical buildings into museums is still ongoing in Türkiye, it can be stated that raising awareness about conservation and re-functioning is critical for future applications, particularly in the education of today's architecture and interior architecture students. In this context, the process of transforming historical buildings into museums in the design studio constitutes the scope of the study.

2. THE PURPOSE and PROGRAM of THE STUDIO

As stated in the introduction, the Tophane-i Âmire building located in the Tophane district of Istanbul has been re-functionalized in the historical process and loaded with various functions. The building, which is used today as the Culture and Art Center, has witnessed different periods in its approximately 570-year history. The fact that its first function was a ball casting center and that it did not coincide with its current function is thought to be the factor that increase the interest in the building.

According to Foucault, museums are considered as places that store time (Ural, 2019, s:87). Due to the Tophâne-i-Mire building's numerous changes in purpose over history and the fact that it still contains all of these traces, it can be seen as a place that stores time. The combination of these two factors can be demonstrated as a factor in choosing the building as the project's subject.

It is thought that the process of transforming the building, which has not undergone major changes in its architecture, but has undergone major changes in terms of functionality and is used as a culture and arts center, will contribute positively to the project development skills of the students based on the limitations in the interventions that can be made during the historical building conservation and re-functioning.

In this direction, only the Five Dome Halls were given as the project area to the students who took the Design Studio VIII course in the 2019-2020 spring term, and it was aimed to determine the concept and to make design solutions suitable for the function. The studio aims to create a design awareness that can re-function sensitive to the historical structure.

The interior architecture department is known as a department that requires excessive discipline and attendance as practice courses gain importance in addition to its theory-based courses when the education program diagram of all universities in Türkiye is considered (Özsıkıntı Kasap et al., 2022).

The spatial needs expected from the students in the Five Domes Hall in the Tophane-i Amire Culture and Art Center vary according to the differences of the works to be exhibited in the museum. However, the spatial needs that are aimed to be created jointly have been determined as entrance, exhibition, temporary exhibition, foyer and education areas.

Although the workshops were carried out with the participation of 20 students, the projects of 7 students were selected in order of success within the scope of the article and discussed. First of all, students who did literature research on the concept of museums and museology prepared their presentations at the end of the first two courses.

In the second step, the students, who reached the plan, section and view drawings of the Tophane-i Amire Beş Dome Hall, made on-site examinations, took photographs and used the method of interviewing the users (who worked in the building), completed their concept studies simultaneously.

The students have acquired sufficient information about the conservation methods that can be applied in the historical building, the areas that can be intervened, and the applications that can be made by considering the elements that need to be preserved in the floor, ceiling, wall and structure. After deciding on the works they will design and exhibit in the museums, the students moved on to the sketching stage.

Throughout the semester, a pre-evaluation presentation (literature study, product selection to be exhibited, concept sheet, etc.), an interim jury (plan, section, study model, 3d models) and a final jury (plan, section, furniture details, ceiling plans, models and 3d models) were held in the studio. The study, which lasted 16 weeks, revealed that there are both similar and dissimilar approaches to achieving the stated goal.

2.1. Components Preserved in the Interior of the Tophane-i Âmire Building and Interventions within the Scope of the Design Studio Course

It is known that there are issues to be considered when determining a new function for historical places. In the project of transforming Tophane-i Amire Five Domed Hall into a museum within the scope of the Interior Architecture Design Studio course, no structural elements were touched on the floors, walls, and ceiling. Designs have been made for the dividers, display elements, and lighting that need to be made

due to the subject without making any irreversible interventions on the existing floor, wall, and ceiling (Table 1).

Table 1. Items Conserved in the Interior of Tophane-i Âmire Building and Interventions Made

	Concerved Items	Interventions Made
Ground	The current situation has been conserved.	No intervention is allowed except for the regional raised floor.
Wall	The current situation has been conserved.	With the use of different materials (glass, fabric, etc.) in front of the walls, additional surfaces that can be used for exhibition purposes have been created.
Ceiling	The current situation has been conserved.	-
Structure	The current situation has been conserved.	-
Services Systems	The current situation has been conserved.	-
Lighting	-	Lighting is used on the floor under the raised floor, on the additional surfaces in front of the walls, on the display elements, and the tension irons used between the columns.
Spacial Fiction	Existing entrances and exits are conserved.	Spaces within the space are created by the dividing elements and the designed structures.

In the projects carried out, various covering materials (felt, vinyl woven flooring, etc.) were used, as well as raised flooring, in a way that would not damage the existing floor.

Gypsum panel walls, various textile materials, and glass surfaces were used in interior partition systems.

Profile led, fiber optic, metal halide led floodlight, and recessed spot lighting under the raised floor on the ground; sconce and sensor lamp on additional surfaces in front of walls; sconces, spots and led lighting in display elements; moving rail spotlights, led waterproof fixtures, and sensor lamps were used in the tension irons between the columns.

Ventilation, heating-cooling systems have been solved by transferring the existing tension irons without disturbing the mechanical system and historical texture of the building.

The functional change has affected the space and created new space needs. Spaces within the space were formed with the dividing elements and the designed structures. The existing entrance and exit doors have been preserved, and precautions have been taken against problems that may arise in possible emergencies with the use of double doors.

3. ANALYSIS of STUDENT PROJECTS

The students selected to design museums around a variety of topics, including the vespa museum, the hat museum, the painting and sculpture museum, the packaging museum, the tuxedo/frock coat museum, the children's clothes museum, and the natural history museum. Within the scope of the project, students were expected to design spaces that include an entrance/waiting area, indoor and outdoor exhibition areas, a temporary exhibition hall, a foyer and additional functions for needs. The adaptation of the changes required by this historical building, which will have a museum function, and the solution of the items that need to be preserved with the right interventions have been determined as the main problems that the students should solve. In this context, the necessity of preserving the original texture of this historical building, which has survived to the present day, and the need to avoid irreversible interventions were frequently announced to the students.

Circulation areas provide the necessary connection between the entrance and other points of the space. While it consists of corridors and bridges horizontally, circulation areas consisting of stairs, elevators and ramps vertically are very important in the solution of the museum as well as in every space. It can be said that the 7 projects mentioned give due importance to circulation areas and all the exhibited works are made visible without any interruption during circulation.

Other important functions of the museum are the exhibition halls, conference halls, multifunctional halls, recreation areas, souvenir sales units and cafes, which are considered common areas. If the existing building could not accommodate all of the common areas, the students predicted that the Single Dome and Cisterns in the same garden with the building were used for the missing functions. In this direction, it is seen that all the projects have solved the main exhibition areas, temporary exhibition spaces, entrance-waiting and sales unit in a single space in a way that will not harm the sense of space of the original building.

Exhibition and circulation areas are defined by the difference in raised floors or floor coverings, and flexible, lightweight and demountable systems are solved using display boards that are lower than the average human height. Thus, while dividing the existing space for necessary functions, there is no compromise in terms of perception.

Vespa Engines Museum

Dynamic forms were created based on the motion and speed characteristics of the engines, and the exhibition elements were designed based on this. Raised floor and curvilinear display elements constitute the prominent features of the project.

A single entrance was used in the project. The visitors, who will continue on the right or left axis from the entrance, are designed to take the museum out after seeing all the products on the determined route.

The temporary exhibition area is designed as a closed area on the left, right after the building's entrance.

Under the domes are displayed Vespas on an elevated floor.

The upper cover is created by hanging acoustic panels on the tension irons in the area.

At the venue's entry, a digital wall with a timeline describing the Vespa engines has been designed on the left axis.

On the platform shown in the section, the engines are displayed on the lower level, and the cinevision area is located on the upper level.

Hat Models From Past To Present Museum

The gaps between the column and the wall are closed with flat surfaces. Thus, instead of a dispersed display, a systematically visited layout was preferred.

Glass lanterns are designed that are airtight due to the textile properties of the hats and can be displayed in low light levels.

Unlike the other students' designs, the project employed two independent entrances.

The museum is accessed via the right-hand entrance on the plan, and the temporary exhibition area is accessed via the left-hand entrance. These two exhibition areas are not connected in the space.

A souvenir shop is located to the left of the entrance, while a waiting area is located to the right.

The cinevision room as a closed area and the semi-open interactive area were designed at the end of the permanent exhibition area.

Art and Sculpture Museum

The museum is intended to be totally accessible from both gates in the project, which includes two different entrances for the temporary exhibition space and the museum.

Apart from the exhibition areas that correspond to the bottom of the three domes in the middle, the entry axes of which are quite regular and the remaining exhibition areas are designed as scattered settlements.

A painting and sculpture workshop was also designed for the organization of various workshops in the museum.

The seminar room and painting workshop, both of which are closed spaces, serve as a partial barrier between the temporary exhibition area and the other exhibition areas.

Packaging Museum

The museum is intended to be totally accessible from both entrances in the project, which includes two separate entrances for the temporary exhibition space and the museum. However, both sections are designed in different forms. The upper coverings on the right side of the museum's entrance axis are designed in broken forms. In this approach, both the packaging was exhibited and a striking element was created. (The image could not be taken because the student is not competent in 3D programs).

The exhibition elements designed in front of the walls are considered as a form that surrounds the interior space in the temporary exhibition area, that is accessible from the left side.

The space is divided into two parts: as a temporary exhibition area and a permanent exhibition area. Exhibits in the temporary exhibition areas were created using removable systems used on the wall surfaces. space-in-space analyzes were performed in the permanent exhibition area using the top cover created.

Tuxedo/Frock Coat Museum

The museum in the project, which has two separate entrances for the temporary exhibition area and the museum, is designed to be accessible from both entrances.

The space is divided into sections by steel display panels, and free-form works are exhibited in the spaces formed between these panels.

To display tuxedos/fants steel-constructed rope-like and conical-shaped pieces are used.

Children's Clothes Museum

Starting with a hexagonal shape, the tunnel was designed with transition zones and a digital exhibition area in the central part. According to the concept, the display elements are designed with broken lines.

After entering the building from the right side and visiting the entire museum, an exit is provided through the door on the left.

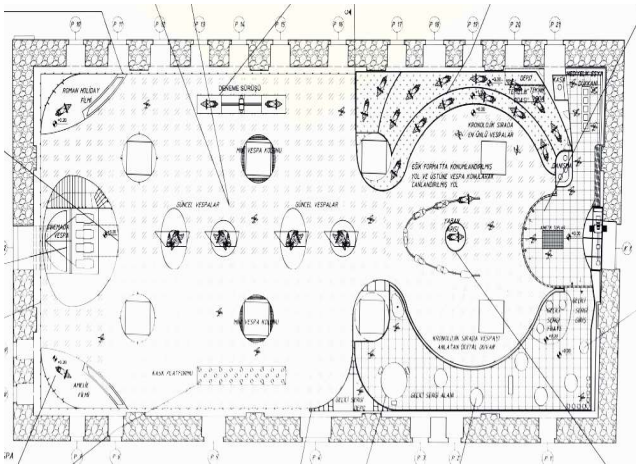
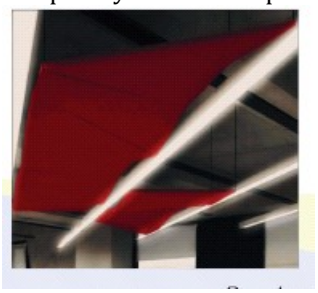
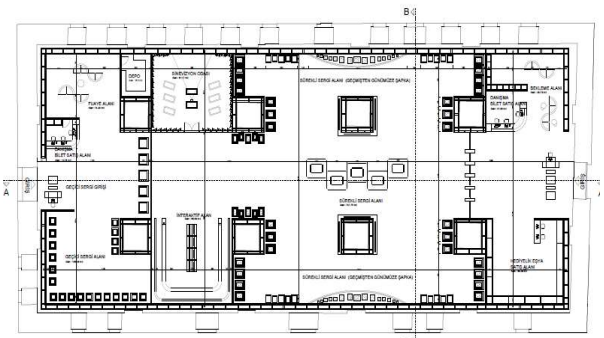
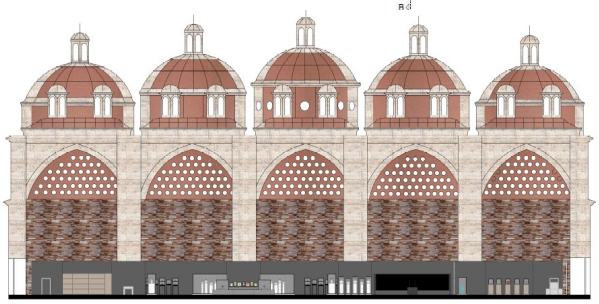
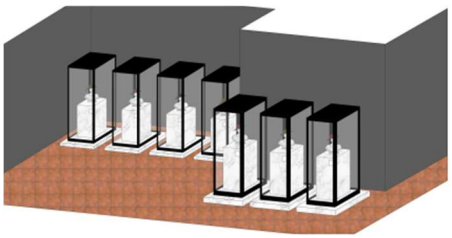
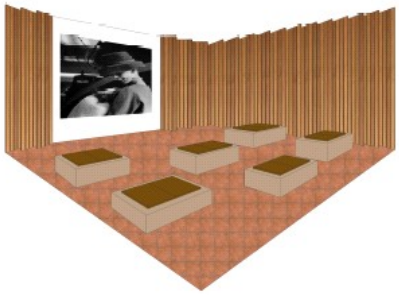
At the entrance, there is a souvenir shop on the left and waiting spaces on the right. In the space, separation was made based on the columns without considering the domes. Each of the columns has been outfitted with detachable elements and used as an exhibition item. Temporary exhibition places are designed right next to the exit.

Natural History Museum

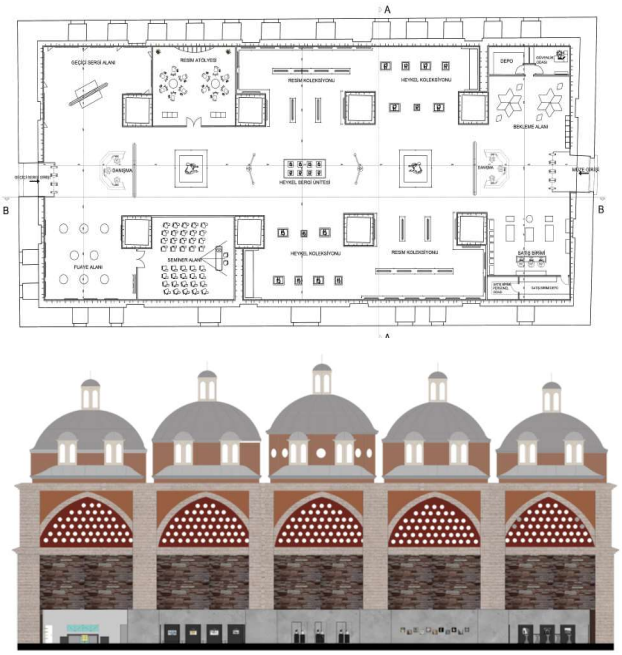
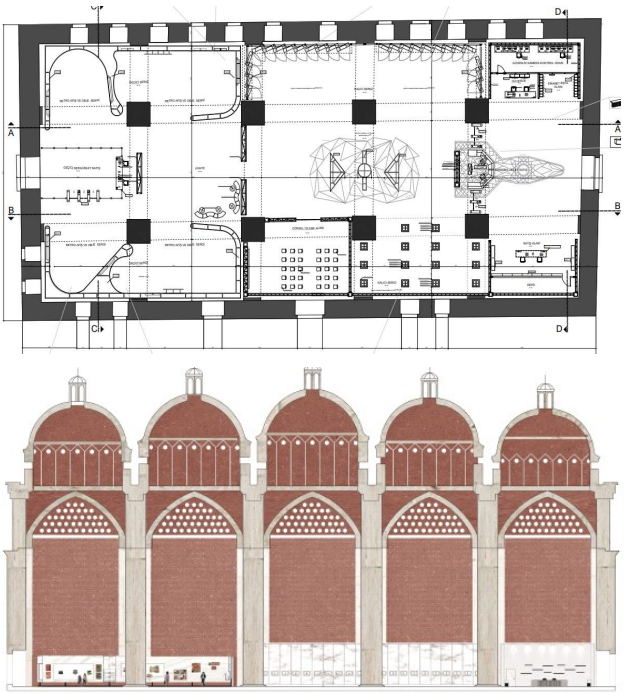
The main editing space is intended to be divided into units using various dividers and to display the works to be exhibited in their natural environment. Circular forms dominate the middle space, which is constructed based on the planets' orbits. Traces of these forms are also used in the ceiling and display elements in the space. After entering the building from the right side and visiting the entire museum, an exit is provided through the door on the left.

The plans designed by the students within the scope of the determined subjects and the three-dimensional images taken from the exhibition area are given in Table 2.

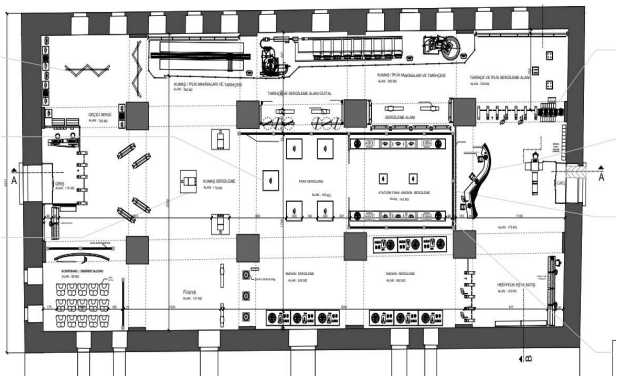
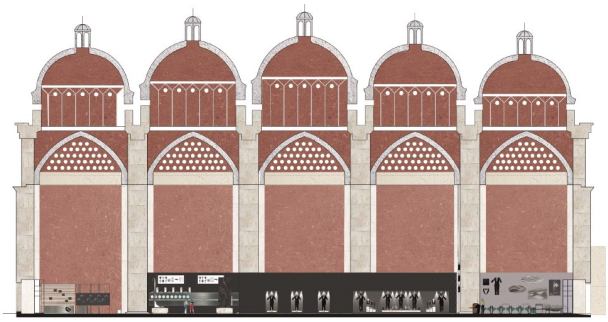
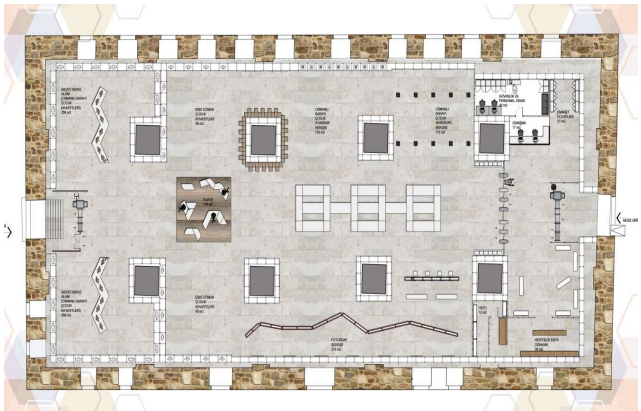
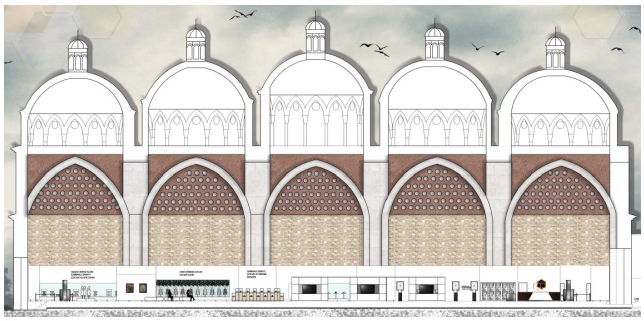
Table 2. Spatial fiction and three-dimensional models in student projects

	Plan/Section	**Three Dimensional Model**
N.A.	**Subject:**	**Vespa Engines Museum**
	 	  Temporary exhibition space 
M.Ö.	**Subject:**	**Hat Models From Past To Present M.**
	 	 

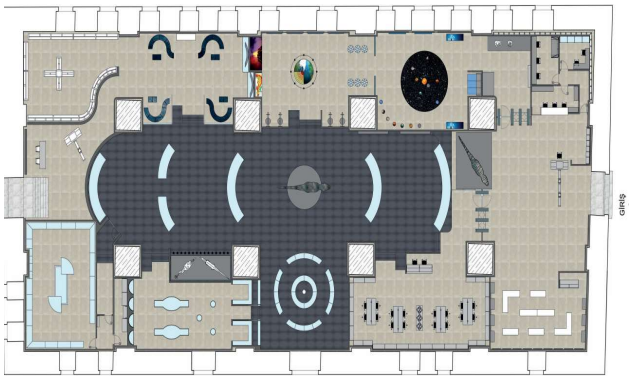
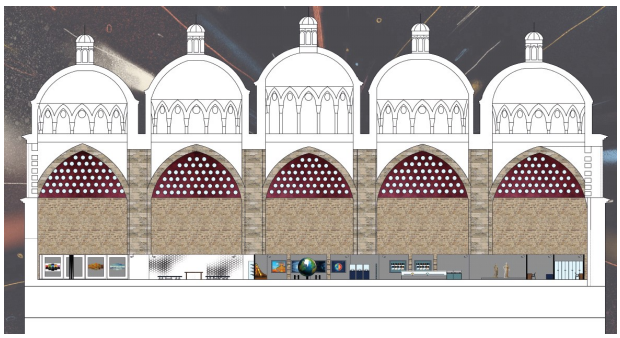
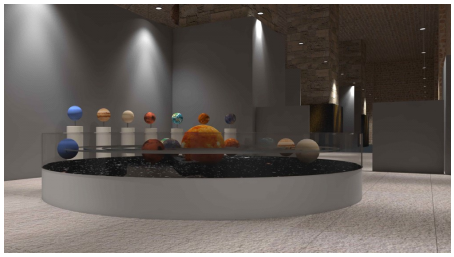
Continuation of Table 2. Spatial fiction and three-dimensional visuals in student projects

	Plan/Section	**Three Dimensional Model**
P.Ç.	**Subject:**	**Art and Sculpture Museum**
		
Ö.A.	**Subject:**	**Packaging Museum**
		

Continuation of Table 2. Spatial fiction and three-dimensional visuals in student projects

	Plan/Section	**Three Dimensional Model**
M.C.	**Subject:**	**Tuxedo/Frock Coat Museum**
	 	 
	Subject:	**Children's Clothes Museum**
Ş.E.	 	  

Continuation of Table 2. Spatial fiction and three-dimensional visuals in student projects

	Plan/Section	**Three Dimensional Model**
Ö.A.A.	**Subject:**	**Natural History Museum**
	 	  

4. CONCLUSION

Studio courses, one of the most basic courses of design education, have a structure that is carried out with both practical and theoretical explanations and by applying different methods in education. The purpose of determining different project topics in each semester is to instill the awareness of a design process in the student and to enable them to have knowledge in different fields. The main purpose of giving a historical building in the project is to improve students' knowledge of historical buildings, to adopt the factors in the conservation of these buildings and to enable them to observe how these factors influence the design.

Given the uniqueness of historical buildings, it is vital to determine the best strategy to ensure their use in today's conditions.

It is not the goal of design education to directly provide the student the answer to a problem, but rather to teach the student how to develop a solution to a problem within the realm of design principles. In the process passed to reach the final product with mutual discussion between the lecturer and the student, the problems in the historical buildings and the solutions that can be brought to the problems, the points to be considered during the design phase were examined and it was ensured that which function was appropriate according to the characteristics of the historical buildings and projects were produced in this context.

Out of the 20 students in the project group, 7 students were chosen based on their success rankings to continue the project in accordance with the concept they generated at the start of the process. It was observed that each student worked with specific topics within the scope of conservation elements and re-functioning. The limited authority to intervene does not does not impede project progress; in fact, it has been shown that limits have a positive effect in some projects.

Of course, there are similarities and differences between projects (Table 3). In most projects, it is seen that the museum main entrance and the temporary exhibition entrance are the same door. In two projects, the temporary exhibition section is completely separated from the museum. A single door was used in only one project, and space differences were created with the elevated floor in the same project.

Table 3. Differences in projects

PROJECTS	N.A.	M.Ö.	P.Ç.	Ö.A.	M.C.	Ş.E.	Ö.A.A
Projects accessible from the main entrance to the temporary exhibition area	●		●	●	●	●	
Projects that use a single door	●						
Projects with different entry and exit doors			●	●	●	●	
Projects using multiple entrances for the Museum and the Temporary Exhibition		●					●
Projects using raised flooring	●						
Integrity in the project	●		●			●	
Indoor exhibition areas		●		●	●		●

As a result, the projects produced during the design studio have shaped the students' designs in line with these dynamics of change, and the cultural heritage has been given a new function without interfering with any element of the building that must to be preserved.

Consideration of historical environments as a project subject in design studios is thought to help future designers to grow up with this awareness and play a significant role in the cultural heritage transfer.

Author Contribution Declaration

A. *Idea and editing* ***B.*** *Literature Review* ***C.*** *Writing*
D. *Data Collection* ***E.*** *Analysis* ***F.*** *Critical Review*

*Belis ÖZTÜRK :**A, B, C, D, E, F***

*Hamide TEMEL : **A, B, C, D, E, F***

REFERENCES

Ahunbay, Z. (2009). *Tarihi Çevrede Koruma ve Restorasyon*, İstanbul: Yapı Endüstri Merkezi.

Alpman, P., S. (2018). Sosyal Teorinin Konusu Olarak Kimlik: Sosyal İnşacı Yaklaşım, *Sosyoloji Araştırmaları Dergisi*, Cilt, 21 Sayı, 2: (1-28).

Brooker, G. & Stone, S. (2012). *İç Mimarlıkta Biçim + Yapı* (Neslihan Işık, Trans), İstanbul: Literatür.

Ceylan, O. (2003). Top Döküm Binaları (Tophane-i Amire) ve Onarımları, *Tasarım+Kuram*, 3, 43-56.

Çolak, B. (2011). Tarihsel Süreç İçerisinde Müzelerle Birlikte Değişen Sergileme Mekânları: New York Modern Sanat Müzesi (MoMA) ve Frankfurt Modern Sanat Müzesi (MMK) Örneği, *Erciyes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 1(30), 37-45.

Dıvrak, M.(2017). *Müzelerde Atmosfer Oluşturmanın Ziyaretçiler Üzerindeki Etkileri: İstanbul Oyuncak Müzesi Örneği*, M.A. Thesis, Maltepe University, Social Sciences Institute.

Eldek Güner, H. (2017). Liseden Müzeye, Eğitimden Tüketime; Kayseri Lisesi'nin Millî Mücadele Müzesi'ne Dönüşümü, *Kültür Envanteri*, 67-87.

Fitöz, İ. (2020). *Top Dökümünden Kültür ve Sanat Merkezine İşlevsel Dönüşümüyle Tophane-i Amire*, Mimar Sinan Güzel Sanatlar Üniversitesi Yayınları, İstanbul.

Hasol, D. (2010). *Ansiklopedik Mimarlık Sözlüğü*, YEM Yayınevi, İstanbul.

ICOM, (2019). *ICOM announces the alternative museum definition that will be subject to a vote* https://icom.museum/en/news/icom-announces-the-alternative-museum-definition-that-will-be-subject-to-a-vote (accessed 07.07.2021)

İslamoğlu, Ö. (2018). 'Tarihi Yapıların Yeniden Kullanılmasında Yapı-İşlev Uyumu: Rize Müzesi Örneği', *Journal of History Culture and Art Research*, 7(10), 510-523.

Kuban, D. (1970). Modern Restorasyon İlkeleri Üzerine Yorumlar, *Vakıflar Dergisi*, 8.

KTB, (1990). *Müzeler İç Hizmetler Yönetmeliği,* https://teftis.ktb.gov.tr/TR-263865/muzeler-ic-hizmetler-yonetmeligi.html (accessed 07.07.2021)

Mazı, F. (2009). Tarihi Çevrenin Korunmasında Sosyo-Ekonomik Faktörlerin Etkisi, *Mevzuat Dergisi*, 12, 1306-0767.

Milliyet, (2021). www.milliyet.com.tr/kultur-sanat/basein-2021-edisyonu-tophane-i-amirede-6571165 (accessed 18.03.2022)

Neredekal.com, (2022). https://www.neredekal.com/tophane-i-amire-gezilecek-yer-detay (accessed 18.03.2022)

Özsıkıntı Kasap, H., Altın, E. & Ergene, İ. (2022). Design principles and concept research in "Interior Architecture Design Studio I" during the pandemic period. *IDA: International Design and Art Journal*, 4(2), 214-234.

Satan, A., Aydın, S. & İpek, S. (Ed.). (2018). *Topkapı Sarayı'nı Anlatmak,* Topkapı Sarayı Müzesi Müdürlüğü, İstanbul

Tanrısever, C., Saraç, Ö. & Aydoğdu, A. (2016). Yeniden İşlevlendirilen Tarihi Yapıların Sürdürülebilirliği, *Akademik Bakış Dergisi*, 54, 1068-1082.

Tunç, Ş. (2014). *Tophane- i Amire ve Osmanlı Devletinde Top Döküm Faaliyetleri*, ISBN:9789759248048, Kişisel Yayınlar Yayınevi, İstanbul.

Turkish Dictionary, (2021). "koruma", https://sozluk.gov.tr (accessed 07.07.2021)

Ural, A. G. (2019). Heterotopik Bir Mekân: Tophane-i Amire Kültür ve Sanat Merkezi, *Mimarlık ve Yaşam Dergisi*, 4(1), 79-91.

Yüksel, G. (2019). Tarihi ve Kültürel Mekânların Sergi Alanı Olarak Kullanımında Yaşanan Sorunlar: KKTC Örneği, *Sanat ve Tasarım Dergisi*, 9(1), 36-56.

Zülfikar, A. & Ediz, Ö. (2020). Değişen Müze ve Müzecilikte Sergilemenin Teknoloji Boyutunun İncelenmesi: Bursa Panorama Müzesi Örneği, *Lycus Dergisi*, (2): 67-100.