An Evaluation on Adaptive Re-Use of Industrial Heritage Buildings as Museums

Amir Kasra Ehteshami

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Approval of the Institute of Graduate Studies and Research

Prof. Dr. Ali Hakan Ulusoy
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science in Interior Architecture.

Assoc. Prof. Dr. Zehra Öngül
Chair, Department of Interior Architecture

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Interior Architecture.

Assoc. Prof. Dr. Hacer Başarır
Supervisor

Examining Committee

1. Prof. Dr. Kağan Günçe

2. Assoc. Prof. Dr. Hacer Başarır

3. Asst. Prof. Dr. Damla Mısırlısoy

ABSTRACT

Adaptive reuse in the context of heritage buildings is described as the process of taking a previously disused building and repurposing it to be used for a function other than what it was originally built for. Where historic buildings can no longer function with their original use, proposing a new function is a valid method to conserve the heritage building. The successful cases of adaptive reuse usually respect and retain a building's historical characteristics, while providing a space that can offer value for the future. Adaptive reuse involves transforming a building to undertake a change of use required by new or existing owners in interior space. Buildings of industrial heritage is a major field of research under the adaptive reuse topic. An increasing number of industrial heritage buildings are subjected to destruction due to their age. The objective of this study is to analyze some well-documented and successful case-studies of adaptive reuse of industrial heritage buildings that are being transformed into museums, to explore the factors that affect their interior design. Accordingly, the research will analyze the selected case studies in terms of context and environment; form and structure; original and proposed function; and will study interior elements including; circulation; color; lighting; furniture; security and related issues of interiors of museums. The study concludes with a list of important factors of interior design, for the adaptive reuse of an industrial buildings as museums.

Keywords: adaptive reuse; industrial heritage; interior design; museum design; interior space quality

ÖZ

Kültürel miras niteliğindeki binaların yeniden kullanımı (koruma ve yenileme), daha önce kullanılmayan bir yapıyı alıp, orijinal olarak inşa edilenden başka bir işlev için kullanılmak üzere yeniden tasarlama süreci olarak tanımlanmaktadır. Tarihi binaların artık orijinal kullanımlarıyla işlev gösteremediği yerlerde, bu mirasın önemini korumak için yeni bir işlev önermek geçerli bir yöntemdir. Koruma ve yenileme uygulamalarının başarılı örnekleri, genellikle bir binanın tarihi yönlerine saygı duyar ve bunları korurken, gelecek için değer sunabilecek bir alan sağlar. Yenileme, özellikle tarihi değeri olan bir binanın, yeni veya mevcut sahipleri tarafından, iç mekanda ihtiyaç duyulan bir kullanım değişikliğini üstlenecek şekilde dönüştürülmesini içerir. Endüstriyel miras binaları, yenileme konusu altında önemli bir araştırma alanıdır. Genel olarak, endüstriyel miras binalarının yüksek potansiyelli bir pazar olarak değerlendirilmektedirler. Ancak, yaşları nedeniyle yıkıma maruz kalan endüstriyel miras yapılarının sayıları giderek artmaktadır. Bu çalışmanın amacı, müzeye dönüştürülen başarılı endüstriyel miras binalarını analiz etmek ve iç tasarımlarını etkileyen faktörleri bulmaktır. Buna göre, araştırma seçilen vaka çalışmalarını bağlam ve çevre açısından analiz edecek; biçim ve yapı; orijinal ve önerilen işlev; ve iç mekan unsurları inceleyecek; dolaşım; renk; müzelerin iç mekan aydınlatması, mobilya, güvenlik ve ilgili konuları irdeleyecektir. Çalışma, endüstriyel miras yapılarının müze olarak yeniden kullanımı için iç mekan tasarımın önemli faktörlerinin bir listesiyle sonuçlandırılmıştır.

Anahtar Kelimeler: yenileme; endüstriyel miras; iç mimarlık; müze tasarımı; iç mekan kalites

DEDICATION

To my Family

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

Conservation is more than just the preservation of heritage; conservation is a way to explore and determine alternative uses for buildings and meet the growing needs of society, while maintaining the value and continuity of heritage (Muralidharan, 2015). Since the contemporary conservation movement began in the 1930s, architects and designers have sought to renovate, empower, and, ultimately, repurpose buildings. When buildings are in good condition, but their service and internal technologies are no longer appropriate, adaptive reuse can be used as a way to meet the standards of the present day. Adaptive reuse is considered as a part of heritage conservation and continuity (Brooker & Stone, 2006; Shehata, 2015). It is possible to bring abandoned or disused buildings back to life by re-functioning them. In recent years, buildings of historical value have been given new uses so that their life can continue in the form of a new life (Mısırlısoy& Günçe , 2016).

Adaptive reuse of industrial heritage is a relatively new topic within the well-established area of architectural conservation. The first activities related to industrial buildings and their preservation began in the 1950s. The Society of Industrial Archaeologists was formed in 1973. Coinciding with the Third Congress, the International Committee for the Protection of Industrial Heritage (TICCIH) was established in 1978 with the aim of recognizing, preserving and preserving the products of industrial heritage (Sýkora. Et.al, 2007). A building with significance in

terms of its characteristics such as of antiquity, integrity and semantic importance is known as a monument. However different countries have different approaches towards conservation of this important heritage buildings. Therefore, international organisations such as TICCH plays an important role in this manner to set up standards and general principles.

Since then, industrial heritage buildings are at the focus of architects and conservationists due to their unique features and the role they play in transforming places. Their special aspects also allow them to be reused for various purposes. Langston, based on the concept of "adaptive green land use change", underlines how sustainable is the adaptive reuse of industrial heritage buildings (Langston & Shen, 2007).

Additionally, Amanda Webb also conducted a valuable research on energy remodeling in historic buildings, and in addition to EU research projects on energy efficiency in historic buildings, based on the 2016 Ashri Guidelines and the 2011 British Heritage Guidelines (Webb,2017). Blagovic and Toffzic consider the need of the modern age to be the choice of a sustainable approach in the renovation of industrial buildings, in which adaptive reuse plays a major role in this view (Blagojević & Tufegdžić, 2016). Romeo and Morzi see the reuse of industrial heritage as accompanying cultural sustainability and energy efficiency (Romeo, Morezzi & Rudiero, 2015). According to Yang and Chan, changing the use of old buildings means reviving the protection of cities by increasing the useful life of the building and reducing waste from demolition. Therefore, adaptive reuse of heritage buildings is closely related to sustainability (Yung & Chan, 2012).

One of the most relevant research in the field of energy efficiency estimation in industrial heritage land use change projects has been conducted by Mark Watson, National Representative of the United Kingdom at TICCIH and expert of the Scottish Heritage Organization. He comprehensively describes the concept of institutional energy in industrial buildings. International charters and the emphasis of relevant institutions on the protection of the cultural significance of a historic site provides the benchmark for achieving successful adaptive reuse projects.

The contents of important international documents should be stated in dealing with this branch of heritage. Especially the Nizhny Novgorod Charter on Industrial Heritage should be emphasized (2003). This document explains the value of industrial heritage and activities related to its preservation and protection. In addition, while maintaining respect for the original layout of the building, it proposes interventions aimed at meeting the requirements of environmental sustainability and energy. "Changing the use of industrial complexes is a good way to ensure their protection, except for complexes that are of special historical importance. The new use should respect the body of the work and maintain the main patterns of activity and cycle of the industry, and should be compatible with its original use" (TICCIH, 2003). In the second chapter of this thesis, the specialized international documents on this issue will be explored in detail.

Therefore, the adaptive reuse of heritage buildings is a complex issue and has many dimensions to be considered, both in terms of heritage conservation and creative design. Adaptive reuse may include various types of interventions to existing structures such as; refurbishment, rehabilitation, renovation, or restoration, or more (Bullen, 2007; Graeme & Brooker, 2005), depending on case specific necessities. This

thesis focuses on the adaptive reuse of industrial heritage buildings, and their transformation process into museums, considering factors affecting interiors.

Many researchers have worked on the issue of adaptive reuse (Brooker&Stone, 2006; Haidar & Talib, 2013), in terms of how sustainable but at the same time creative this process it is. However, as stated before, adaptive reuse of industrial heritage buildings is a relatively new subject within the topic of contemporary conservation concepts. Following the changes in production systems, especially pioneered by the central Europe, a considerable amount of industrial building stock has been reused for cultural purposes, as a part of reuse and regeneration projects. This has been a sustainable and a creative way of re-purposing an existing building stock, but at the same time provided conservation of architectural products of an important period in history.

Therefore, this research discusses the adaptive reuse of industrial heritage buildings that are transformed into museums, with a focus on factors effecting interior design. These factors include plan schema, circulation and accessibility, color and lighting, finishing materials, furniture and fixtures, security, and environmental factors. The main aim of the research is, by learning from experience, to underline aspects that are significant in terms of achieving successful adaptive reuse projects of industrial heritage buildings as museums.

1.1 Statement of the Problem and Objectives

A significant part of the current architectural stock belongs to industrial buildings, which have been in danger due to changes in production technologies and the social and economic conditions that come with it. In the process of preserving products of industrial architecture, environmental and economic dimensions are never separated

from cultural and social dimensions. Today, industrial heritage is considered as one of the main elements of the city more than ever as an accelerator and an investment for urban redevelopment (Luis, 2011).

Adaptive reuse is considered as a solution for heritage protection of underused or disused heritage by re-functioning them (Shehata, 2015). Accordingly, buildings of historical value have been given new uses so that their life can continue in a new form (Brooker & Stone, 2006; Mısırlısoy & Günçe , 2016).

Industrial heritage buildings have distinguished features, such as being functional, flexible and specious, that needs to be protected and carried into the future. Moreover, belonging to a kind of international style and global characteristics, identity and values, structural features and simple geometry, as well as intangible values, there are significant amount of aspects that needs to be appreciated. These are the main reasons for the adaptive reuse of industrial heritage for the purpose of conservation and continuity (Leus & Wouters, 2009; Toloe Ashtiani, 2006).

Changing the use of industrial buildings in order to preserve industrial heritage is also essential for sustainable urban development. This study seeks to explore the benefits of reusing industrial heritage not only from the point of conservation, but also as a creative act, from the perspective of interior design, focusing on the factors influencing its interiors. In this regard, 8 buildings, located at different parts of Europe, that have been transformed from industrial heritage into museums, have been selected as case studies.

1.2 Limitations of the Study

Like any other research project, this study has some limitations. The present study is limited by the researcher to evaluate factors affecting interior design of adaptive re-used Industrial Heritage Buildings as Museums. Eight case studies are selected as successful examples from central Europe and are determined for this research. The selected case-studies of this research are:

1. Tate Modern, London, UK. The former Bankside Power Station transformed to Art Gallery by Herzog & De Meuron.
2. Baltic Centre for Contemporary Art, London, UK. The former Flour mill transformed to Centre for Contemporary Art by Ellis Williams Architects.
3. The Musée D'Orsay, Paris, France. The former Train station transformed to Museum by ACT Architecture.
4. Fondazione Prada, Milan, Italy. The former Distillery dating transformed to institution dedicated to contemporary art and culture by Rem Koolhaas.
5. Kuppersmuele Museum, Germany. The former Warehouse transformed to Museum by Herzog & De Meuron
6. Lanitis Centre, Limassol, Cyprus. The former Carob Mill transformed to Carob museum by Christian Christou.
7. NIMAC (Nicosia Municipal Arts Centre), Nicosia, Cyprus. The former Old Powerhouse transformed to Arts Centre by the Nicosia City Council.
8. Istanbul Museum of Modern Arts, Istanbul, Turkey. The former Warehouse transformed to Museum by Tabanlıoğlu Architects.

Therefore, this study is limited to the above stated case-studies in terms of factors affecting their interior design as transformed museums of industrial heritage.

1.3 Methodology

The present research is in the category of descriptive and applied research in terms of its purpose. Through learning from experience as empirical research, selected case studies are explored from the criteria extracted from literature reviews. Well-documented pioneer examples of reused industrial heritage buildings from central Europe are being selected, as the main scope of this research is adaptive-reused industrial heritage buildings as museums.

Accordingly, the plan schema, circulation and accessibility, color and lighting, finishing materials, furniture and fixture, security, and environmental factors are the considered as significant interior design features and are being analyzed in each one of the case studies.

1.4 Research Outline

This research will be finalized in three parts and five chapters as; Introduction of the study is given in the first chapter (Chapter 1).

PART I; a literature review is carried out on the definitions and principles of conservation and adaptive reuse of industrial heritage. Another literature review is carried out on important factors of interior design especially regarding museum design (Chapters 2 and Chapter 3). In Chapter 2, Adaptive reuse as a way of conservation of built heritage will be discussed, focus will be on industrial buildings' adaptive reuse. In Chapter 3, adaptive reused museums and related interior design aspects will be discussed.

PART II; case study analysis of the selected cases is carried out according to the extracted criteria from the literature review (Chapter 4).

PART III; lessons learned will be explored and a success guideline has been formulated accordingly (Chapter 5). Finally, in the last chapter of the thesis, conclusion and future research will be discussed.

Chapter 2

INDUSTRIAL HERITAGE

2.1 Chapter Introduction

Heritage conservation is a well-established discipline especially considering its long history over a century. The discipline has been evolving and incorporating many contemporary concepts to create an up-to-date vision towards heritage. There are numerous well-known international organizations such as the UNESCO, ICOMOS, ICCROM, and many more which works continuously on heritage issues both intellectually and towards implementation of those ideals through international charters and related documents.

Industrial heritage, on the other hand, can be considered as a relatively new subject within heritage conservation. In the middle of the twentieth century, when several industrial buildings and urban landscapes in the United Kingdom were demolished, the notion of industrial heritage began to emerge. Ever since, numerous attempts to identify and intervene the works of industrial heritage have been made. A special charter on industrial heritage named as “The Nizhny Tagil Charter for the Industrial Heritage” has been published on July 2003 by “the International Committee for the Conservation of the Industrial Heritage (TICCIH)” in order to advise ICOMOS on industrial heritage related issues. Industrial plants are regarded as a phase in human history; they contain stories of a period that was a hindrance, symbolizing hope for a better life at the same time. Industrial buildings represent the technological advances

of countries and the socio-cultural values of their own age through their architecture (Hanachi,2017).

In this chapter, with a review of above-mentioned sources related to the present study, the issues of heritage and its importance and conservation, focusing especially on the industrial heritage, industrial heritage classification and adaptive reuse of industrial heritage buildings are being introduced.

2.2 Heritage

The term “heritage”, has been expanded in meaning with the developments and new concepts added to the heritage concepts. A proper understanding of the word "heritage" as a topic is necessary to illustrate the intrinsic value of a heritage-related issues in the built environment. To be more explicit, in the last century, the term ‘heritage’ has become to include everything from objects to buildings and urban squares, moreover to include immaterial concepts such as dialects or folkloric traditions (Orbaşlı, 2019).

Heritage is characterized and split into two distinct forms, Cultural Heritage and Natural Heritage, according to the United Nations Educational, Science and Cultural Organization (UNESCO) (1972 and 2016), where cultural heritage is can be analyzed as "tangible and intangible" typologies of cultural heritage.

Therefore, According to UNESCO (2016);

Cultural heritage includes artifacts, old buildings, a group of buildings and sites with a range of values, including symbolic, historical, artistic, esthetic, ethnological or anthropological, scientific and social significance, including:

- **Tangible cultural heritage:** movable cultural heritage (paintings, sculptures, coins, manuscripts), immovable cultural heritage (monuments,

archaeological sites, etc.), cultural heritage underwater (shipwrecks, ruins and cities underwater)

- **Intangible cultural heritage:** oral traditions, performing arts, rituals.

Natural heritage, features, geological and physiographical formations, and delineated areas which, from the point of view of science, conservation or natural beauty, constitute the habitat of endangered animal and plant species and natural sites of value. It includes nature reserves and parks, zoos, aquariums and botanical gardens; and natural sites with environmental aspects.There are several types of constructed heritage. Built heritage typologies, and forms of land use are defined within the heritage studies. "Industrial buildings, residential buildings, and places of worship, for instance, are / were all used for various purposes; their intrinsic cultural significance would therefore be indicative of their use. For example, a type of industrial heritage would reflect a former industrial building with heritage significance" (Alfrey and Putnam, 1992; p: 9).

As stated above, heritage conservation has been a well-established discipline with many internationally accepted rules and regulations. ICOMOS, for instance, is an international non-governmental-organization and is an advisor body for the UNESCO. Annually, many conferences and meetings are being organized to ensure an up-to-date vision in terms of heritage conservation.

These, in turn, suggests improvements in local-national laws and regulations of heritage conservation.

2.2.1 Heritage Conservation

Conservation of heritage is a technique or action that may take many forms. There are many international organizations such as the UNESCO, ICOMOS, ICCROM, TICCIH and many internationally accepted documents of conservation such as the Venice Charter and the Burra Charter that implies how well-organized heritage conservation is.

Therefore, heritage conservation includes interventions at different levels. Intervention in the field of preservation of historical monuments specifically means entering the natural process of life of the work and taking actions and making changes to them (Staniforth, 2010: 52), which can lead to prolonging life or damaging them (Vinas, 2009: 56) and because it is an activity that changes the natural process between the formation and destruction of works and is considered as a kind of interference in this process, this term (intervention) has been used. In the modern conservation culture, the level of interventions depends on the age and values of historic buildings and sites (ICOMOS, 1993-2010).

2.2.2 Types of Interventions

Heritage building conservation involves numerous levels of interventions through different approaches, such as Rehabilitation, Renovation, Restoration and Adaptive re-use. Conservation is a profession committed to the future of protecting cultural heritage. Examination, recording, treatment, and preventive care are included in conservation activities. Conservation is an action that covers other processes of conservation, such as reconstruction, repair, rehabilitation, redesign, sustainable reuse, refurbishment, and more.

Rehabilitation is the suitable opportunity since there is more flexibility to restore or replace the new historical cloth. Therefore rehabilitation can be considered as minimum level of intervention to historic building, where changes in circulation routes and furniture can occur.

Renovation includes major repairs of historic buildings (Eakin 1993). Renovation is usually comprises of a part or whole building, renovated according to original design, however can incorporate contemporary materials.

Restoration is also referred to as refurbishment, refurbishment is either aesthetically or mechanically the method of maintenance or major repair of an object. It is the physical interference of the building's real fabric to ensure its structure and efficiency. Document research, original design and original materials plays an important part of restorations (Ahunbay, 1996).

Adaptive re-use as cities and its populations continue to develop, itis important that the historic resources also fulfill contemporary necessities and uses. These structures need to be functional and to become utilized spaces. (Macclung,2019).

Generally, adaptive reuse can be described as keeping a building's basic structure and fabric intact and modifying its original use with a contemporary understanding. However, it is necessary to consider the concept of "adaptive reuse" within a wider context. Several additional meanings have therefore been given.

Adaptive reuse is defined by UNESCO (2002; p: 13) as seeking new use appropriate for a place "that respects form, character, structure and historical integrity and often

needs some serious changes to a place". This study will focus on industrial buildings as heritage to be transformed by adaptive reuse. Adaptive reuse refers to preserving what's best about these places but develop them in a way that is answering to the contemporary needs of the inhabitants.

This kind of an approach has many examples in the discipline of interiors, as it may create unique spaces, where different periods of history come together to incorporate inspiring spaces. (Brooker & Stone, 2006; Macclung, 2019).

Buildings may become out of use for many reasons, such as changing economic and industrial practices, demographic shifts, increasing cost of upkeep or maintenance. Mostly because they are no longer suited for the original function and a new use has not been identified. (Macclung,2019).

Adaptive reuse includes decision-making processes which comprises of a complex set of considerations including location, flexibility, heritage, cost, architectural assets, overall beauty and market trends. Adaptive reuse can transform heritage buildings into accessible and useable places; also ensures that new spaces are designed to be lived in a sustainable manner. The most successful adaptive reuse projects add a contemporary layer that provides value for the future and also respect and retain a building's historical significance. (Günce & Mısırlısoy, 2016; p; 92).

Revitalization

Revitalization means conscious intervention in the urban space to prevent erosion and create a new urban space while maintaining the original and main features of the space (Karamipour, 2009: 2). This term refers to a set of measures that are performed with

minimal intervention in the body, with emphasis on changing the bodies in order to eliminate and reduce functional, physical and visual burnout (Karamipour, 2009).

Therefore, the passage of time and the changes that occur in the demands and consequently the needs and the way human beings respond to those needs have always been existed. Technical and cognitive advances, changes in customs and behaviors, production and consumption of various goods have always occurred and have turned the city into an arena of important changes in human civilization. These changes have existed in different eras, but they have emerged in very important periods of the past. Among these periods are the Industrial Revolution and its aftermath, the world wars and their effects, and the formation of modern and postmodern schools of thought. In any case, making such changes in the entrances of the city, has its impact on the entire city system (Seyedian, 2005: 70).

2.2.3 Universal Charters and Resolutions

In the 20th century, numerous world conferences and congresses on urban improvement and renovation have been held and researchers have presented valuable policies and strategies (Hanachi, 2012: 122-144).

Table 2.1: The Impact of Some of the Most Well-Known Global Urban Intervention Seminars on Conservation Related Issues (Author)

No.	Title	Year	Description
1	Athens	1931	• Objective: To protect monuments • Intervention area: single monumental buildings. • Level of intervention: minimum
2	CIAM	1960	• Objective: responding to contemporary needs in terms of Modernity. • Level of intervention: depending on functionality

			• Proposed principles: functional design, contemporary needs
3	Venice	1964	• Objective: To improve confusions in the approaches towards historic buildings and surroundings • Area of intervention: valuable individual buildings, and their surroundings as sites. • Proposed principles: minimum however reversible and identifiable interventions
6	Council of Europe	1975	• Objective: To formulate the principles of restoration and texture restoration. • Proposed principles: creating attention for participatory conservation
8	Amsterdam	1975	• Objective: To improve the confusions in conservation • Proposed principles: Implementation of public participation projects and modernization. Holistic approach towards conservation.

2.2.3.1 Exploring Global Thoughts of Scholars in the Field

Study and analysis of different theories, ideas, methods, styles and patterns of intervention in historic contexts is important to explore initial ideas in the field of conservation. According to Table (2-4), the views of the world's most renowned scholars in the field of conservation revolve around the three main axes of improvement, renovation and reconstruction.

We have to state here that the scholarly conservation, still today, revolves around the ideas of important scholars, most important names are; John Ruskin, William Morris, Eugene Violet le Duc, and Camillo Boito. As a summary, we can state that there are two main views on the subject; first one is a romantic view where we should not take

any action and we should let historic moniments became ruins. Other view advocates that we need to repair and restaore the historic buildings according to their original design with original materials. And a final view advocates reconciliation of both (Basarir, 2009). However contemporary understanding of conservation, includes continuity and has to be case-specific.

The way of intervening and dealing with the old context among different countries has been according to their prevailing political, economic and social conditions. But at the same time, some principles and methods are common. In the developed European countries, the issue of erosion generally includes historical, valuable and old contexts, the preservation and restoration of which is highly significant. These spaces have a high position due to their potential in attracting tourism and strengthening the tourism industry (Mojrabi, 2008: 2). The experiences of these countries can teach many lessons, and the goal is to find appropriate patterns and methods that can be flexible to be defined depending on special cases.

2.2.4 Industrial Heritage

The International Industrial Heritage Protection Committee (TICCIH) was established in 1973. The study of industrial heritage is an international society and describes the definition of industrial heritage as "the remnants of industrial cultures of historical, technical, social, architectural or scientific significance" according to TICCIH (2003). These remnants may consist of: buildings and machinery, factories, mills and plants, mines and processing and refining sites, warehouses and shops, places where energy is produced, distributed and used, transport and all its infrastructure, as well as places used for industry-related social activities such as accommodation, religious worship or education (TICCIH charter, 2003).

The social order is changing. For some three decades, industrialization has been the key driver of the global economic and social transformation, with one nation after another growing from agrarian dependency to some modern form of production (Douet,2013).

Today, for the first time in human history, more individuals live in cities and towns than in villages. Today, the flourishing trade and industrial investment of the emerging markets represents a more dramatic shift in how the global economy has worked for over two hundred years, replacing the traditional flood of natural resources into the industrial West, which in turn has flooded the developing world with textiles and other luxury goods (Douet,2013).

Modern technologies, new methods of organising labour, new ways of using the power of water or steam to manufacturing in the second half of the eighteenth century, new forms of systems that we now call mills or factories, and, in the second half of the eighteenth century, the early stirrings of what had come to be called the 'Industrial Revolution' by the 1840s could be observed, first in the Great Revolution, And in these new manufacturing societies, a contemporary market culture with novel preferences and working conditions has evolved, replacing the millennial standards of seasonality and uncertainty that had governed pre-industrial agricultural economies. Industrial history is a complex combination of places and people, processes and events, which appears to defy the explanation of its origins and surprises in the middle of its development and decay (TICCIH, 2003).

Most of the original interest in what is today called heritage arose out of curiosity and investigation into the history and archaeology of the medieval era and earlier. Indeed,

industrialization and its cataclysmic effect on pre-industrial societies and ecosystems in Europe have been, in some respects, the result of the need to preserve the past (Douet,2013).

Therefore, when we consider the values linked to the industrial legacy, we need to understand that the perceptions of heritage of the public derive from origins, feelings and attitudes that lie elsewhere, in a previous period and a specific aesthetic, in the midst of, and partly for, the overwhelming impact of industrialization on the lives of us all. In the heritage arena, industrial history is relatively a recent arrival, fresh and challenging. Identifying why it matters is important not only for the general public, but for many heritage organisations and practitioners (TICCIH, 2003).

Much as industrialization has become a modern, economic and social phenomenon, the challenges posed by the restoration of its remains also require innovative new methods. Often, for one reason, laws produced could not fulfill the new industrial heritage requirements. Both of these aspects have an impact on the value assessment strategy (Douet,2013).

Industrial heritage is arguably a specific cultural discussion; it raises questions that have not been found elsewhere in the field of heritage and needs fresh answers because there are few precedents. A society afflicted by economic collapse or high levels of unemployment is not always called upon to support the preservation of an aging factory estate, depending on arguments based on conventional heritage values (Douet,2013). Therefore, conservation of industrial heritage is a topic that still needs more scholarly exploration at the present.

2.2.5 Industrial Heritage and Adaptive Re-use

As has been mentioned above, industrial heritage consists of the remains of industrial periods which are of historical, technological, social, architectural or scientific value. As (Casanelle, 2007) states, the conversion or adaptive re-use of industrial buildings may create conceptual problems to the ideals of the practice of conservation, especially in terms of authenticity.

"It is even difficult to discern the authenticity of an industrial structure. The dynamics of production and the changes brought about by the development of technology mean that industrial buildings are constantly evolving, renovating, enlarging or their spaces have become different ends." What has come down to us is as valid as trying to recover something from the original that has been lost ever since, so that future generations can understand that a particular city or region was formed by industrialization. Different parts of its heritage must be preserved, so that something of the complexity of the process can be assessed, only a few of these elements become a museum, the rest must be reused or returned (Günçe & Hoşkara, 2009).

The urban condition evolves as modernization continues. Former industrialized buildings are recollections of our past (Wong, 2017, p: 32). It is also important to retain these memories of people and the man-made context. TICCH is especially important for this study as it is related to the conservation of industrial heritage.

Deindustrialization, as practiced in many parts of the world, has created many abandoned industrial heritage buildings. Demolition of these buildings is not a sustainable or even acceptable solution to the problem of causing more damage in the long run (Austin et. Al., 1988; Clark and Wallenberg, 2013; Zapary, 2000a., and

2000b.) . Reusing them can be a solution to many of these challenges. Austin et al. (1988; p. 17) emphasizes that "adaptive reuse is the process by which old buildings are structurally constructed for economically unique uses."

Adaptive reuse is a sustainable, environmentally and economically viable method, not only at the building scale but also at the urban scale. Most importantly, when you reuse an abandoned industrial heritage, an entire urban segment may transform itself.

According to Hardy (2016; p. 16) "To succeed in an adaptive reuse project, three general factors must be considered: the nature of the reuse, the availability of funding, and the aesthetic approach adopted." The texture of the building must also be considered. Involvement of users is another important factor in this process. However, the structural conditions of the building as well as the economic conditions in a place are also important. Alexander Garvin (2000; p. 34) stated that "planning is a public action that creates a lasting and widespread response in the private market." In this regard, community participation is also a factor in this process. It can be argued that Europe plays a key role in the consistent reuse of industrial buildings, as they began these stages earlier than the rest of the world, so the main case studies in this study were selected from the Central Europe (Chapter 4).

A successful adaptation is an adaptation that respects the character of the existing building and its historical context and adds a contemporary layer to the heritage building without copying what has already been done. Adaptive reuse of a heritage building is a challenging process because heritage values, physical features and potentials of the heritage building must be thoroughly and comprehensively analyzed (Brooker & Stone, 2006; Günce & Mısırlısoy , 2014).

2.2.6 Industrial Heritage Classification

It is important to provide an industrial heritage classification in terms of building typology. Consistent with the classification of it is also possible to separate cultural heritage and industrial heritage into tangible heritage and intangible aspects. Movable industrial heritage contains tangible heritage, Industrial buildings and industrial sites are immovable. Intangible heritage requires the method of craftwork, conventional craftsmanship, and so on. (Nan, J. W. 2006).

The below are the different types of industrial heritage values:

- Historic value: meaning the value of industrial heritage as a period in human history
- Technologic value: showing the technological advances of a time period
- Economic value: these entities can create an economical income
- Educational value: humanity can learn from these entities
- Psychological value: showing a period that people can familiarize themselves-memorial values.

Figure 2-5 shows classification of industrial heritage and what it involves; (Nadolny et al.,2020; p:5).

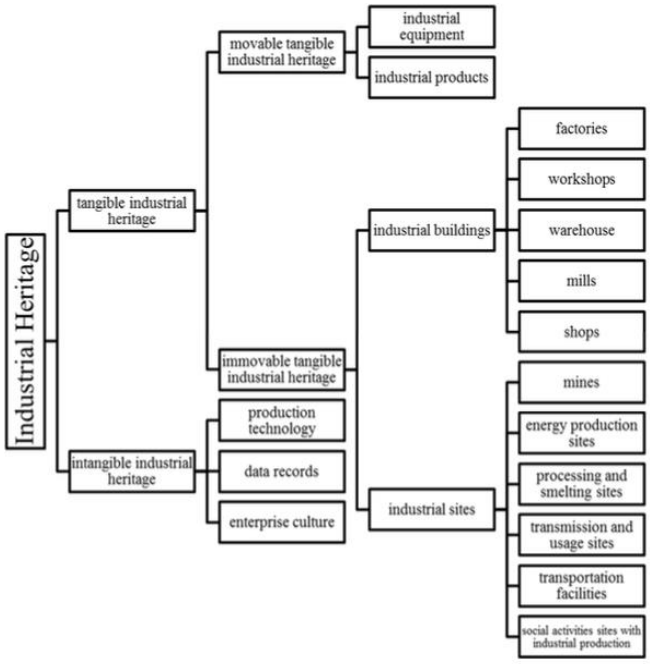

Figure 2.1: Industrial Heritage Classification (Nadolny et al., 2020; p: 5)

2.2.7 Industrial Heritage Values

As it is well known, after the establishment of important international organisations and declarations, the attitude towards this heritage has changed in recent years, and "since the buildings of industrial architectural heritage represent the culture, historical conditions, processes, technologies and outstanding achievements of the region." (ICOMOS Generla Assembly, 2011: 2), "should be protected as an intangible heritage when used" (Taipei Declaration, 2012: 1). On this basis, industrial heritage values can be categorized as follows: 1. Historical value, 2. Technological value, 3. Economic value, 4. Educational value, 5. Psychological value. (Jie, 2009; Xu, Cao, 2012).

After discussing the values of industrial heritage and almost in parallel with it, there has always been a discussion about the necessity and how to protect them. "By defining industrial heritage and explaining its values, in the mid-1950s, industrial archeology began to grow as an independent branch in educational societies" (Cossons, 2007: 34).

"Although at first researchers had many doubts about the protection of industrial architectural heritage and considered the possibility of negative interpretations in the protection of this type of building among the people, but with the beginning of the protection process and review of its feedback, the intensity of criticism decreased. Critical researchers have somehow joined the proponents of the preservation of this building (Summerby Murray, 2002: 54). "In addition to the economic growth of society, it creates a sense of pride for the nation that owns them" (Landorf, 2010: 23).

Efforts are being made to preserve this heritage. "Although the destruction of this valuable species of industrial buildings is the result of several years and a gradual process, but their preservation and revitalization can be short-lived and relatively simple, and show beautiful and pleasant images of the culture and history of the region; Such as the reconstruction of the Broken Hill mining town, which in some respects changed the culture of the Australian people (Jackson-Stepowski, 2009: 209).

Considering the values of industrial architectural heritage as a heritage for the present and future, it can be pointed out that psychological values also play a very important role in creating a concern for the protection of this building. (Mahdavi Nejad, 2016).

Concern for the preservation of the heritage of industrial architecture arises from the fact that people feel that this heritage defines a part of their history and identity, and to introduce themselves to others, they can be proud of their past and heritage and proudly name it. It should be noted that not every monument is part of the national heritage, a building that in addition to historical background is intertwined with the spirit and culture of the people, members of society easily accept it as their heritage and can play a role at the present day.

2.3 Summary of the Chapter

The purpose of this chapter is to understand what is heritage, especially industrial heritage and to explore internationally accepted procedures and organisations in this manner. Heritage conservation and its importance were then explained. Among these, industrial heritage, which is one of the main keywords of this research, was studied according to various findings and definitions. Then, the issue of reuse of industrial buildings that are part of the heritage of nations was discussed. International organizations and documents of conservation, especially as related to the industrial heritage, were examined for the purpose of this research. Reuse of these buildings requires architecture and design in various dimensions.

Chapter 3

MEUSEUM DESIGN

First, the idea of the museum and history are discussed in this chapter. Then there will be a brief emphasis on the specific types of museums, and at the end of this segment, in certain categories, different types of art museums are explained.

3.1 Definition of the Museum

There are different explanations of museums available. Museums are co-educational institutions and an integrated means of describing them is not straightforward. The Museum is mainly a venue for learning, researching and enjoying collections (Alexander, 1979).

3.2 History of Museums

Throughout history, individuals with distinctive cultures have taken extraordinary care to preserve and exhibit their precious artifacts and through museum buildings survive their music, art, architecture and history. Buildings are set to be a museum in some cases and essentially built on this purpose and building is modified and redesigned to be a museum building in some other cases. The style of interior design may vary due to the form of set or the philosophy of the architect about the room and its specifications.

Conversely, the problem is distinctive in an adaptive reclaimed building style. According to the collection style and main theme, the current building and its inside room can be built without missing its main characteristics.

In all museum building styles, there are several interior architecture methods that are analogous. The focus of this study, considering the variety of interior design elements, is on contemporary art museums. Well-designed structure, circulation and usability, paint, illumination, finishing content, display units and furniture, protection, sustainability issues and culture are these characteristics.

The Museum of the *Louvre* was not initially a royal palace. In 1190, King Philippe Auguste ordered the building of an imposing castle on the site of the Louvre Museum to defend the city from invaders. The site was used as a palace from 1364 and it was modified over time to the present role of storing art artifacts and collections from all over the world.

The Pyramid of the Louvre, an expansion to the Louvre Museum, was designed in 1989 by the Chinese architect I.M. Pei is actually used as the main entrance of the museum according to the specifications of the time (Figure 3.1 & 3.2). In addition to the old building that is retained intact, the lobby is designed using the new technology and materials of the construction era.

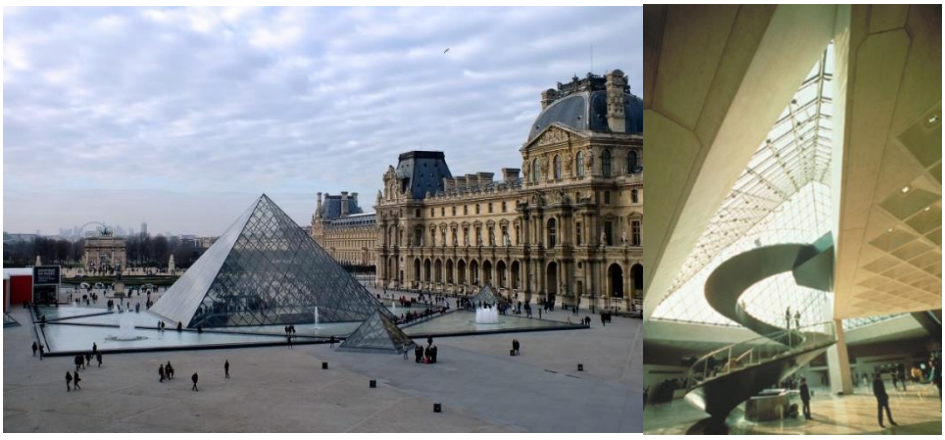

Figure 3.1: Louvre Museum (architectmagazine.com)

The Museum of Edo-Tokyo is located in Japan. It was established as the place of preservation of the Edo legacy in March 1993. It parallels, at the same time, history, literature, culture and architecture. It could in a good way, distinguish old Tokyo (Edo Period) from new Tokyo. While it is a history museum (Edo-Tokyo Museum, 2009), the key is its entrance. Reflections of culture can be seen very well. In the museum, the nostalgic status of routine life is reflected on a scale without restriction (Figure 3.3) (Edo-Tokyo Museum, 2009).

Figure 3.2: Edo Tokyo Museum (gotokyo.com)

It is possible to observe diverse architecture approaches in various countries of different historical and cultural histories.

3.3 Museology

What goes into the creation of a museum? A structure constructed by a world-famous starchiest'? Is there a public demand? To present, authentic and entertaining collections? Workers who are dedicated? Sponsors who are generous? More questions can occur depending on the situation. However, the question I want to answer is

whether there is a need for museological expertise in modern museum ventures, how this expertise is being exercised, and what this expertise entails.

The museum has changed a lot from the mythical and Greek temple to the present day, and even from the first generation museums in the Renaissance, and various forms of this phenomenon have emerged, and even this transformation has intensified in recent decades. Today, the museum is a multifaceted conceptual and social phenomenon and its elements are defined based on its multiple and social characteristics. Due to these multifaceted features of museums, their evolution and evolution do not have the same area and different shapes have appeared based on different aspects of the museum. The current perspective of museums, which has a conceptual conception, causes their evolution to be found at both levels of the concept of the museum and their focal art, the concept of museum works.

After the Renaissance, European man had the opportunity to see the world with a global perspective. Familiarity European tourists return to their home countries with special, fascinating and wonderful examples of historical species or relics of past or primitive peoples, which together create a huge and fascinating collection. Churches were maintained as national assets and public viewing was made possible. All of these formed the first steps of post-Renaissance museology. He considered them collections of works, which is why it has been known as an important part of the museum since the beginning of the collection.

Early museums, like palaces and churches, were the only place to collect works of art or rare species of nature, they only thought about collecting, they were not even very interested in communication and the audience, and they were more of a property honor.

Therefore, something called expression was not relevant to them and they did not seek to express themselves in their function, so they almost lacked the structure and tools of expression. These museums had the central idea of collecting and the criterion for their evaluation was the multiplicity and variety of works and even the emphasis on the originality of the works, and it can be said that what created power for these museums was the originality of the works and the power of ownership. After this period, with the opening of the doors of palaces and artistic-historical treasures and the generalization of collections, a simple and basic connection was established between museums and the audience, which was the strata of society. And one of the functions of museums was defined along with the collection and classification of works. With the increase of works, the need to pay more attention to these works and their museums arose, at the same time, different branches of modern sciences were formed.

At this stage, the museums were taken out of the warehouse to preserve the works, and scientific views accompanied the museums, and museum management took on the meaning of classifying the works. Therefore, if all kinds of works could be found in a museum, at this stage the museums were classified by scientific definition and each was found according to the subject, such as museums of archeology, geology, zoology, anthropology, art history, etc. Arranged museum objects. The second stage can be considered as the stage of scientific museums with a one-dimensional view of the works. Let us keep in mind that at this stage, since the historical, cultural and anthropological view of European countries is self-centered and considers Europe as the leading center of humanity, it seeks the evolution of civilization with the same self-centered view in museums. Museums organized their works, which were the product or achievement of science and science, based on the logic and order of the sciences, especially the historiography of any scientific field, such as archeology, zoology,

botany, and art history. The expressive logic in this generation of museums was the historical expression of phenomena, and museums considered it their duty to provide a general narrative in each area. The means of expression in this period were simple narrators such as footnotes, brochures or catalogs, which illustrated the same general order as the museum message. During this period, museums followed the dominant scientific discourses and tried to show themselves in harmony with this knowledge.

With the expansion and growth of museums, especially in the subject area, the thematic area of the museum became so wide that they were no longer limited to historical narrative and paid attention to other aspects of phenomena, so museums accepted other and new topics that were very diverse as their message. They even narrowed down their attitudes and put a smaller range of topics and knowledge into their problem. This was the stage when museums paid more attention to their research and educational aspects and added to the museum's functions. Therefore, the expression in the museum was also influenced by the research-educational aspects of museums. The methods of conveying the message should be appropriate to new topics. Is the expression of this period.

Museums have reached a social status at this stage and are defined as a sustainable and effective medium for them to continue their role. Defining the role of the media from their museum makes them a means of conveying a message and a message must be made for each museum, and even this message is explained on another level for the museum's work, which is why it is the messenger's duty for other works besides the museum itself. Defined. If having messages and messaging from museologists and critics is really challenging, Abu Dhari museums are still being created for communities and government officials to do under your guidance.

3.4 Museography

With the challenges posed by critics in various fields such as history, art, documents, etc., museums that tended to be a message or even a direct expression of social themes were questioned and even highly questioned, and this issue. It was suggested that the definition of a museum and its works with a specific message or messages is to limit and enclose the museum and its works within a specific time and function, which causes them to become disposable phenomena that quickly change their charm and life. On the other hand, these museums ignored the characteristics, interests and rationality of the audience, thus facing the repulsion of the audience in the field of expression, all of which led museums to take an approach that went beyond the message and even believed in it.

The issues had multiple aspects that should allow all aspects to be placed in front of the audience and the result to be formed in the audience. These museums, which were oriented towards the audience, thought about the freedom of the audience and believed that part of the museum belongs to the audience and is not in the possession of the museum owners, so the expression tools at this stage have paid special attention to the audience and its role. And know the means of expression. This stage, which builds new museums, has taken the definition of a museum into a conceptual and multifaceted phenomenon that transcends limitations.

At this stage, museums went beyond objects, and if before these museums were known for their collections and works, at this stage the museums became aware of the audience, and that is, the audience became the main and important target of the museums. As the museum no longer makes sense without the audience, the museum

is for the audience and tries to define social and human goals, and to achieve its goals, recognizes its audience and its characteristics to plan according to these characteristics, in this view, each audience has a special place. It has its own and there are different conditions and perceptions according to each audience, other museum works are not limited to a specific and fixed message and perception, and even each audience can achieve different perceptions in time periods.

The sum of these attitudes made museums audience-oriented, and all the elements pay attention to the characteristics of the audience and its appropriateness, and even the architectural spaces in museums are an opportunity for the audience and their presence.

3.4.1 New Definition: Conceptual and Diverse Definition

Today, the museum can no longer be limited to one definition, and even the definition provided by ICOM - the International Council of Museums - has undergone many changes and challenges, and the council is trying to correct this definition. In different years, we have witnessed the presentation of different definitions at national and international levels by specialized museum associations, each of which has tried to present the characteristics of the museum and its elements, which also affect the expression of the museum. In summary, we can say that museum definitions provide an overview of this phenomenon, and each museum has its own definition in the context of global definitions and should have its own definition. One of the most comprehensive definitions provided for a museum is the definition of the General Assembly of the British Museum Association in September 1998:

Museums are places that allow people to explore a variety of objects for inspiration, education and personal enjoyment. These sites collect and preserve a variety of works on behalf of the community and make them available to the public.

3.4.2 Description of Key Terms Used in this Definition

A "collection" is in fact organized samples of selected materials left over from human activities or the natural environment with information about them. In addition to the objects of scientific specimens or works of art that are kept in the museum building, a collection can also include buildings or grounds. Protection includes the restoration, safety and management of collections.

Making available includes all actions taken to describe, teach, display, present, document, research and publish inside or outside the museum premises.

In this definition and even similar definitions, there are two common aspects that are necessary for an organization to be a museum and have a great impact on expression in the museum. One of these important elements is the collection.

Fiona McLean (1997) writes in the introduction to the book marketing for Museums: "The museum is a complex collection. The history of that period has undergone a whole transformation. It comes in a variety of forms and is run by countless organizations and individuals. Its goals are not precise and its importance to the public is unclear. It is full of contradictions. No two museums are exactly alike. There is no single understanding of the museum. There are many definitions of a museum, but disagreements about its fundamentals continue. The tasks assigned to museums, such as the definition given to them, are unclear. "Museums have something in common with their collections."

This is the opinion of one of the museum analysts, which cannot be a general rule, but it can narrate common and basic points such as collections that have a special and high value from the point of view of critics, which leads us to these values and maybe pay

special attention to subscriptions. Another important point is that no value or aspect in a museum denies other values or aspects, and perhaps a more successful museum that can consider and plan all aspects in balance but at a high level.

3.4.3 Museum Work and its Harvest

One of the key concepts that has shaped the perception of museums is the work or works of a museum. Creates a thematic identity in the museum. Accordingly, the type of attitude towards the work and the collection and the meanings for which it is made, paid and transferred cause the formation of a series of evolutions of the museum.

"Collection" is a group of museum works that are in a thematic connection and affiliation in a field or in other words in a museum. Finds. With the evolution of the museum, the interpretation of the museum work and its perception has changed. In the following, we will briefly discuss some prominent views on the museum work.

3.4.3.1 Result as Object

In the past, any object that had a historical antiquity, whether it was an ancient human structure or a plant or animal species that was the product of geographical or scientific discoveries was called a museum work. It was not the equivalent of an antique museum.

3.4.3.2 Result as Message

In the expanded thematic view, the work was not valued simply because of its historical aspect, but each work was of museum value because of the data and information it received. At this stage, an object or work was inherently known to have information, and the curator's job was to discover and transmit that data or message. This approach equated the work with the message, and the expression of the museums of his work was the transfer of data and findings of the work, and tools such as

footnotes or labels of works and even the human guide were considered as means of expression in museums.

3.4.3.3 Premises and Buildings as Museum Works

In another stage, the view has been raised that the separation of the work from the original position causes some of its information to be lost and a complete understanding of the subject to be lost. And contain information that is worth protecting or studying and introducing. These sites are not portable and can accommodate several components, so these sites or historical monuments themselves were considered a museum complex.

3.4.3.4 Effectiveness of a Set

In another view, the work of the museum itself was not complete and meaningful in itself, but the window work opens to a more complete subject and it was known as a part of a thematic collection. The set defined its place in expressing the message of the set. In this view, the tool was the expression of the whole set and other complementary tools tried to serve the overall message. In this way, the relationship of the elements with each other caused the message to be made and received by the audience.

3.4.3.5 Audience of the Narrator of the Work

With the evolution of audience studies in relation to works of art, history, literature and other similar works, the attitude has intensified that it plays a major role in expressing and receiving the subject or message of the audience and the characteristics of the audience have a great impact on the outcome of communication. The audience is diverse and proliferating both in a wide range and in the individual realm, it is fluid and mobile in such a way that at any moment it encounters a series of cognitive and emotional achievements with the work, as a result of the perception of a set or work related to Knowledge is the audience's feeling, desire and attitude.

As in the theory of media selective approach, the audience chooses and receives the message. In a further definition, the audience is not only the recipient but also the creator of the message. He considered the audience as one of the means of expression.

3.4.3.6 Documentary Result

With more museums focusing on the subject and accepting the duty to be relevant to the subject and the audience, the work of museums is no longer limited to objects, and any work including human achievements, man-made, intangible works and spiritual heritage and anything that is documented and can be cited To convey the subject or message of the museum itself is also known as a museum work, as in this broad sense, audio and video works and even new electronic and computer works are also known as museum works and can play their citation and expression role.

3.5 Museum Buildings

There are two primary viewpoints about the museum building; museums that were designed originally as museums, and museums that have been transformed into museum buildings.

3.5.1 Originally planned Museums

Building and planning a building for a particular purpose is a general challenge. For planners and architects, it is better to think of the building's structure, structures, equipment and structural features. The museum is one of the main types of building that requires a specific multidisciplinary process.

Bilbao's Guggenheim Museum is a museum of contemporary and modern art and one of the world's most famous museums. Designed by Frank Gehry, it is situated in Bilbao, Spain (Figure 3.4).

Figure 3. 2: Guggenheim Museum (LeCuyer, 2003)

3.5.2 Spaces Adapted as Museums

Today, reducing assets and growing human requirements lead to the reuse of old buildings. In other words, in order to be efficient, buildings have undergone some changes. Considering an alteration approach means an outdated and useless system is going to be modified. In the entire house, there are modifications, but it is only the feature of the old building that remains intact.

There are several conditions which should be included in adaptive-reused programs. The first element of adaptation is to give the building a new purpose by preserving the historic features of it. In other words, in order to discourage relocation, changes should be as small as possible.

It is easier to patch the degraded component than to destroy it. If a substitute is required, the new function must complement the older one in all possible respects. In the event of expansion, it can be prohibited to use products that would kill the original one.

A building can be transformed for a modern function for many reasons. Enterprises and owners are urged to enhance the efficiency of their land as well as their goods. The prices of the properties are getting higher as the space characteristics change. Besides these variables, the happiness of the customer is higher. The quality of work during working hour's increases as their criteria and demands are fulfilled.

On the house, several diverse styles of uses such as nursing residences, offices, museums and exhibits can be excreted. The uncertainty becomes greater as the adaptation is directed at planning the building for the purpose of the museum or exhibition. The museum's primary property is its collections. Objects, historical items or artworks may be them. The main argument though is that collections have a sense of their own and their function is to convey it. There is also a dynamic connection between adapting the building to the purpose of the museum and adapting the collections to the space of the museum (Doumbas, 1990).

One of the good examples of adaptive, reusable projects is *Santral Istanbul*. In the Ottoman time, it was used as a power station prior to its regeneration. It was the oldest industrial area in Istanbul and until 1983, it provided the city with electricity. It is one of the most important initiatives in the field of art and culture in Turkey (Figure 3.5).

Figure 3.3: Santral Istanbul (santralistanbul.org)

They can be applied to the interior of the museum when discussing the general problems of the museum building. After leaving the room, interior space has the main influence on the individuals and their philosophy. Interior variables are subsequently clarified.

3.6 Interior Design

Interior design is a professional and action-oriented process that includes the planning and implementation of interior spaces with all its elements. Interior design is related to performance, function, security, efficiency, aesthetics and space stability. That is why the work of an interior designer reflects some interdisciplinary abilities such as environmental psychologist, architect, product designer, and so on (Edwards, 2011; p. 1). Since the interior is the backstage for all human actions, its nature is more than the sum of these parts (Taylor & Preston, 2006; p. 9).

British Interior Design Association (BIDA) identifies interior designers as those who have acquired the necessary competencies through training, experience and the acquisition of specific skills. With skills such as the ability to acquire knowledge,

research, and creatively solve problems tailored to the performance and quality of the interior, an interior designer can make recommendations about design elements, including furniture and layout; but s/he cannot enter into construction or supervision contracts (Edwards, 2011; p. 4). According to International Interior Design Association (IIDA), an interior designer is responsible for specific tasks and actions to achieve the goal of improving the quality of life, increasing efficiency and providing health, safety and public welfare. These tasks and actions are described in detail by the IIDA (Edwards, 2011; p. 4).

3.6.1 Interior Space

Space is disciplinary, as previously described; the inner discipline, however, has yet to accept space on its own terms. For example, Wilwerding indicated that from an instructional and disciplinary point of view, little attempt was made to research this significant aspect of our career (Wilwerding, 2013; p. 66). Inner space is probably both and none of the stuff defined by other disciplines at once. It is not a homogeneous space, taking together several different ideas from all disciplines, but a specific structure that captures the inner discipline's particular concerns. As the word space is used contextually for the fields of architecture, it is understood that ' the space spoken about by architects [or interior designers / interior architects] is not necessarily space, but an interpretation of it that is very unique to their own field is a category invented for their own purposes (Forty, 2000; p. 275).

This 'own career' of architects and interior designers / interior architects can refer to a variety of space theorization. In conjunction with its ability to pinpoint one's position in space using Cartesian geometry, the concept can be used in an analytical context. For example, in many architecture and design courses, Francis D. K. Ching, whose writings are fundamental texts, describes space as the three-dimensional field in which

objects and events exist and have relative location and orientation, esp. a portion of that field set apart in a given instance or for a specific reason (Ching, 1995; 217). The Cartesian 'static approach' to space was, for example, the basis of the Beaux Artsideal of nineteenth-century interior configurations of space based on axes and hierarchical openings, says architectural historian Clive Edwards (Edwards, 2011; 115). In comparison, however, space can still be used within the inner discipline to represent both the physical constructed environment and the environment's social fabric.[1] Philosopher Gaston Bachelard said that inhabited space transcends abstract space (Bachelard, 1994; p. 47).

This, then, are the different ways in which interior designers / interior architects think about space and draw upon the space structures we have previously described that are relativist, absolutist and mental and what does space look like indoors? For our discipline, what is space?

There are a variety of cases in which space actually includes interior design / interior architecture from inside. In a functional sense, space is known in its construction implementation and in its ability to be exploited by the designed form in different ways.

As stated initially, I would contend that space in the interior domain generates discussions on the following main issues, particularly in the discipline 's teaching (representation of space, occupation and usage of space and well-being of users of

[1] 'Behavioral settings', for instance, comprise 'space, its surroundings and contents, and the people and their activities'. See Bryan Lawson, The Language of Space, Architectural Press, Oxford, 2001, p. 23.

space), three categories that can be grouped more generally into the areas of space contact (representation), space experience (occupation of space).

It is necessary fourth type, a theoretical way of interacting with space that is unique to the discipline, which would be to think about the characteristics of inner space (interiority). Although these may tend to be simple categories, they refer to the way in which space is consciously engaged and used and theorized by interior designers / interior architects. However, the general categories listed here aren't totally recent. For example, Clive Edwards clarified that conceptual awareness of space is necessary for interior designers in relation to this experience of movement, creation and representation (Edwards, 2011; 115). What is different, arguably, is that the definitions introduced here discriminate between functional and theoretical interaction with the interior design studio's applicable spatial principles. But how technically is volume made use of? (Power, 2014; 19).

3.6.2 Factors Affecting Interior Design

- **Light**

Without illumination, nothing is apparent. The illumination of objects relies on the light that is allowed within the ambience. If the illumination varies, a single space might be interpreted differently.

Interior lighting can be natural or artificial. While daylighting is the best option for sustainability, in the lack of sunlight at night, the lack of light cannot be rejected, so increasing the quality of artificial lighting would be as critical as catching daylight in the interior environment (Potter, 1856).

The basic distinctions in lightness and darkness are the leading point here. Everywhere the light reaches, it is followed by accessibility, clearness, awareness. A variety of negative emotions, on the other hand, are linked to gloom, such as mystery, sadness, terror, etc. (Gorden, 2003).

Light may be implemented either naturally or artificially in room. Undoubtedly, the sun is the greatest source of light. There will, however, be certain circumstances in which there is no availability to the sunshine (Figure 2.1).

Figure 3.4: Taubman Museum of Aart, Using Skylight and Artificial Light

Lighting is a strong device in a designer's hands to focus the attention of viewers and make them concentrate. In the space, an object is differentiated by the direction of light. In addition, illumination can be used to display the scope of a space's significance and draw the perception of visitors, such as exhibits, waiting rooms and other related places (Benya & Karlen, 2004).

The degree of luminance in the whole process of perception also plays an important role. For users, various levels of light reflect different experiences. Color is also a key visual element that has a direct connection with light throughout its life (Figure 2.2).

The arrangement of light sources helps a designer to increase an interior design's attractiveness.

Figure 3. 5: Light and Color Play at the Museum of Art

Each space has its own characteristics and has its own unique effects on people. The very first glance impacts the observer the most. As Halonen (2010) put it, learning is closely linked to the vision phase that happens spontaneously in the human brain. One of the reasons that can cause the proper step is lamination or it can convey negative emotions to the spectator. As Tadao Ando, the artist, articulated his theory, it is generally light that shapes spaces (Licht, 2000).

Light plays an important role in a venue, as Tadao Ando said above, especially in museums that showcase special objects. Each place wants its own different way of designing lighting. As described in Aalto University, 2010, there are various categories of spaces that can be categorized;

- Spaces built for work and public service: In places where functionality is the core factor that drives the designer's practice, the principles of vision and ergonomics, protection and connectivity are the main elements to be met.

- Spaces planned for shows and sales: The picture, whether faithful to the facts or far from fact, interactive, interesting, is the place where the most essential need is.
- Spaces built for tourism and residence: Locations where sun can fulfill the need for warmth, stimulation, aesthetic value, status symbol.

The problem of lighting for the show and museum areas is very different. This is important for the understanding of space, displays and works of art and the synthesis of them all. The purpose of this study is on spaces for museums and exhibits. The most regarded scenario at the outset was the exhibited work. But the house is still deemed to be part of the show process for days. This means that the entire architectural elements are treated as the art pieces, both inside and outside the house, and have their role in the last remark of the tourist about their visit. Designing a gallery room has gone farther than exhibiting artworks, as can be seen. One of the most powerful components of architecture is illumination. It is more than about setting up some lighting equipment now. In addition, it should be discussed more extensively.

- **Color**

Lights are converted by objects. When they invert light to the human eye, they can be seen. Often the pigments in the objects mirror various wavelengths, often they convey. Our eyes interpret these reflections as colors (Figure 2.3) (Madran, 2012).

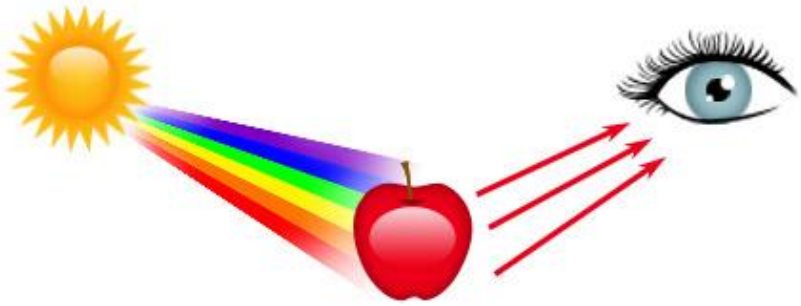

Figure 3.6: Light and Objects (quora.com)

The world of color point to human feelings. Applying different color is codes of designers. Color distinctions or 'intonation' make in the human brain a type of hierarchy and guide it. The theory of color does not make people happy. It exists, though, to help people become more compatible to their area (Bierren, 1988).

Metamerism implies shifts in color value under varying lighting conditions. With different types of light, their importance and characteristics can change. Incandescent and halogen lamps, for instance, enhance the impact of yellow and red colors and deactivate the colors of green and blue. A fluorescent light is absolutely the other way around. Greens and blues are boosted and yellows and reds are silent (Figure 2.4) (Barnett, 2010).

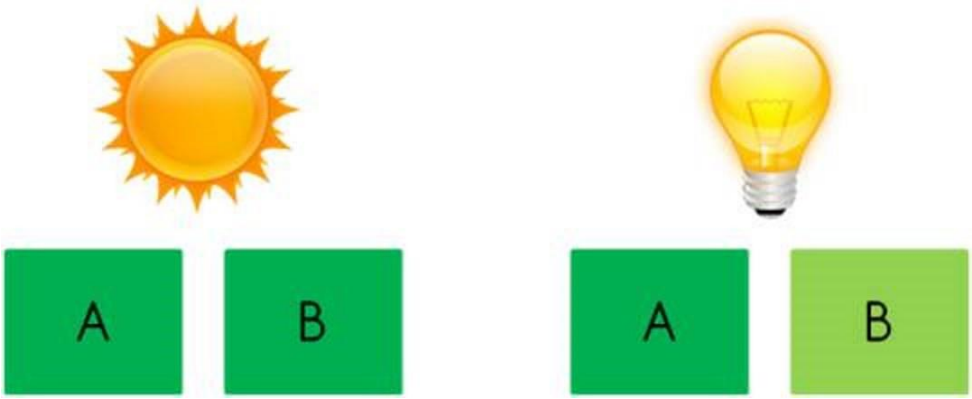

Figure 3.7: Under Different Lighting Conditions, the Value of Colors Changes, which is Called Metamerism. (linkedin.com/pulse/metamerism)

Color is one of the most remarkable plan elements. It is extremely feasible and can easily impact the architecture. The color of a room indicates what the creator wants to pass to the observers (Birren, 1989).

A separate message from the color is received by each person. The explanation is that the perceptions of clients differ widely due to multiple variables. In order to inspire the feelings of the consumers and then attract them, the designers add various themes by colors. Colors thus affect human sensations through numerous channels. The color causes him or her to undergo a sudden psychological and physiological experience when one enters a room. It was possible to deepen this experience and eventually achieve the condition that the creator would have in mind. Obviously, it is therefore so critical for an artist to know how to add the correct color in order to get in prosperous the exact sense (Grimley & Love, 2007).

In Figure 26, the use of white wall color as the backdrop of photographs has made images more apparent. Further, the space to be viewed has been rendered larger (Figure 2.5).

Figure 3.8: Pace Gallery's White Color Walls (pacegallery.com)

Researchers have proposed that varies colors reflect distinctive moods, attitudes, beliefs, etc (Benya & Karlen, 2004). Blue is recognized as a color that is calm and soothing, providing a sense of comfort. Although yellow is synonymous with light and sunny tendencies, red is associated to joy, passion or some intense sensation. Green allows consumers to work at their lots of energy, and purple might attach the feeling of strength or allegiance (Grimley & Love, 2007). It is obviously visible in figure 6 that the use of warm colors has given the room a warm feeling.

Figure 3.9: The Use of Warm Colors to the Harold Golen Gallery walls (miamiartguide.com)

Each color bears a distinctive vision. Designers should then know the concept of colors well and properly implement them.

- **Circulation**

Circulation: movement through space (Ching, 2007). Our movement's direction can be perceived as the perceptual thread linking a building's rooms, or any set of internal or exterior spaces, together. We encounter a space in comparison to where we have been and where we foresee moving as we pass through time through a series of spaces. This

chapter describes the key elements of the circulation structure of a building as constructive aspects that influence our understanding of the building's forms and spaces (Ching, 2007).

Components of Circulation

Since any room a person can enter or occupy is part of a building's circulation system, when we talk about circulation, we generally don't try to account for where every user can go. Instead, the main routes of the bulk of users are mostly approximated.

Architects usually split their thoughts according to various forms of circulation, which intersect with each other and the overall preparation, to help simplify them. The form and nature of these divisions would be depending on the design, but may include:

- direction of movement: horizontal or vertical;
- kind of use: private or public, front of house or rear of house;
- Frequency of use: in general, or emergency;
- Time of use: morning, day, evening, continuous.

It would take particular design attention for each of these styles of circulation. The movement, carried out in the dark or fully illuminated, crowded or human, could be fast or slow, mechanical or manual. The paths could be winding and leisurely, or narrow and straight.

Of these forms of circulation, the **direction** and **use** of a building structure are also important layout (portico. space).

Table 3.1: Direction of Movement: Horizontal or Vertical

DIRECTION	
Horizontal circulation	Vertical circulation
There will be hallways, atriums, paths, entrances, and exits. It is often influenced by the arrangement of furniture or other items in the space, such as columns, trees, or changes in lighting.	That is the method by which people walk up and down the interior of the house. It necessitates the use of things such as stairs, lifts, ramps, ladders, and escalators to allow movement from one floor to another.
USE	
Public circulation	**Private circulation**
These are the most widespread and readily accessible parts of the house. In this form, circulation often overlaps with other elements such as a lobby, atrium, or gallery, and is raised to a high architectural efficiency level. Visibility issues, how people pass, and basic escape routes are all significant.problems, how people pass, and simple routes of escape are important.	The more personal gestures inside the building or the ugly ones that require a degree of secrecy are accounted for.

Designing Circulation

When it comes to designing circulation, there are two laws of thumb. The main pathways for circulation should be:

1. Be simple and unobstructed
2. Take the shortest path between two points.

There is a fairly clear explanation behind these two laws of thumb: People want to be able to pass with ease and flexibility around a house, without fearing or getting confused. Often you choose to disrupt a clear circulation route with a furniture item or a level change to identify a change of venue, make pedestrians slow down, or have a focal point for architectural purposes. Similarly, the shortest path between two points doesn't always have to follow circulation. Instead, it should take care of the sequence of spaces, thresholds, and atmospheres encountered through movement, that prepares you for the transition from one room to another.

Circulation, to bring architectural significance, may be choreographed. In this way, Circulation is also directly related to Programme, Or what tasks are done, other key Architectural Concept that we will focus on in this sequence (portico.space).

Efficiency and layout of circulation space

Circulation space is often seen as useless space, applying a project to an unwanted field and expense. The term productivity also goes hand and hand with circulation as a consequence. For example, commercial office buildings and apartment buildings would usually aim to reduce the amount of circulation space and give this space back to leasable tenancies or apartment interiors, thus creating benefit. In these cases, where the buildings are often tall, the vertical circulation at the middle of the building is often built as a heart, with stairs and elevators closely clustered together, with narrow halls at each floor leading to the individual apartments or offices away from this core.

In comparison to this form, where all the circulation is centrally positioned and sometimes concealed, it is possible to convey circulation externally and display it from the façade or inside the house.

The Pompidou Centre in Paris, designed in a high-tech style by Richard Rogers and Renzo Piano, is a celebrated example of this technique. Here, you can see the transparent escalators snaking through the open face of the building with red undersides, ever shifting motions of individuals rendering the building present and involved in the square (portico.space).

3.7 Interior Design Aspects of Museum Buildings

The most significant part of any museum is the interiors. The key perception is focused on the arrangement of the environment within the interior. People attend museums for

numerous reasons. Several factors contribute to the successful understanding of the interior architecture of museum space.

The primary items in a museum building are collections. Thus, the intention was only to present people with the displayed objects. Nowadays though, room and objects collectively create an exhibition area. Space can be used to maximize the effect of arrays, artifacts can be more useful for the environment, or they maintain their own sovereignty in certain instances (Tzortzi, 2007).

A good architecture of the museum impacts visitors at first sight. A big achievement will be the first influence and idea of the museum. A good design will offer people an optimistic feeling that helps them engage with collections and space in a better way.

3.7.1 Circulation and Accessibility

Since their social position became popular, museums continued to be recognized as cultural places for individuals. Their initial role was to encourage tourists to view items displayed however nowadays museums has many additional roles and features. The location of artworks and artifacts in museums should encourage tourists to see all of them and to gain the greatest amount of knowledge found in the exhibition.

In visiting a museum, there are some steps. When visitors arrive, it is important to determine if they want to visit the attraction, or if it is worth paying the price or not. Therefore, before visiting the museum, there should be a lobby (Bitgood & Lankford, 1995). These rooms are busy and there is usually a souvenir shop in a lobby area.

Visitors are faced with a different location after purchasing the ticket and agreeing to visit the museum. To help visitors navigate their way inside the museum or exhibition

room, there should be a reference map or related drawings to help visitors.The way that architecture and layout describe a series of rules for the movement of visitors will determine the pattern in which visitors communicate with objects (Kaynar, 2005).

The interior museum area and its circulation space are described. Some represent the well-known principle of *'form follows function'* that through their visit from beginning to end, visitors can follow defined accessible paths. They have few alternative choices to choose from.

Figure 3.10: Guggenheim Museum, New York, USA (guggenheim.org)

Visitors should be able to locate the routes quickly during the tour. In a place where pedestrians can see them without any barriers, boards and leading signs should be located. They should not be hidden by anything; they must be mounted in such a way that they are not shielded by anything. The font, scale and color chosen for the text should be picked appropriately and in the museum galleries they must be unchanged. Finding the way out is one of the common difficulties. In order to direct tourists from entrances to the exits, circulation should be planned or directing signs should be provided (Figure 3.7).

Figure 3.11: Exit Signs at the Pompidou and the Louvre (pinterest.com)

3.7.2 Color

Light is transformed by objects. When they reflect light to the human eye, they can be seen. In artifacts, pigments often reflect various wavelengths, often relay them. Our eyes consider these reflections as color (Figure 3.8) (Madran, 2012).

The world of color represents to human sensations. By using a range of colors, designers provide passwords. Color distinctions or 'intonation' make the human brain a kind of hierarchy and guide. The theory of color does not make one happy. It exists, though to help people become more accustomed to their surroundings (Bierren, 1988).

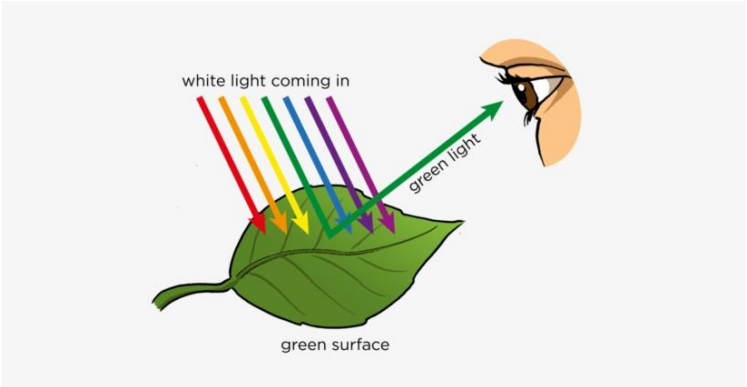

Figure 3.12: Our Eyes Consider these reflections as Color (pngkey.com)

There is a sense of each color and it varies according to the situation. The use of colors in museums, displays and galleries helps to emphasize the sense of the shows and even the building itself. Under the considered framework, their influence should be examined. Coloring up the walls is simply to give visitors some codes and signs for the space in which they are. Seeing and perceiving colors are closely related to the strength of light. It is light that makes colors in each case viewed differently. Illumination will alter any part of the world; it may generate or sometimes may even destroy a space.

In the 20th century, the dominant colors in galleries and museums are white and light gray (Figure 3.4). Before that it was popular to use a bright, darker hue. Choosing colors relies on the exhibitions and the choice of the artist. A written rule for painting the walls in a museum or exhibition area does not exist. For historical artworks, large art galleries have used darker backgrounds (Figure 3.15).

Figure 3.13: Museum of Modern Art, Wakayam

Figure 3.14: Michael C. Carlos Museum, Atlanta, USA, (2001)
A, Japan (2001)

Metamerism implies changes in colors under different lighting. With different types of light, their importance and characteristics can change (Barnett, 2010).The color of wall of galleries and museum in has a great influence on the perception of both position and works of art. Generally, the attitude of the general guest is determined by the gallery's light and color. The world becomes more alive and comprehensible as color strength gets higher.

Although it sounds more formal and intense in a darker setting. Color is often used to distinguish two halls or draw attention to a particular subject (Figure 3.11). Natural light is the best option for lightening an interior space. In this case, drawing colors are much more realistic than being under artificial lighting. Since they have been drawn under natural light, they can better expose their essence. A neutral equilibrium between cold and warm spectrums is created by natural sunlight. Two rooms on opposite sides of the building with precisely the same color-northern and southern parts-have a distinct look based on their location and the light emitted. In addition, during the day the quality of light varies and creates color variations.

Figure 3.15: Amon Carter Museum (Tilden, 2004)

3.7.3 Light

Light plays a significant part in architecture. Firstly, illumination is what makes it possible for us to be observed. All without light is dark and pointless. Our experience of a room is influenced directly by light. It sets limits, lets a space feel smaller or wider, and distinguishes places from each other as well. In people's way of thought and perceiving, light has a great function. In addition to the architecture of the house, it can also fully alter or even regulate emotions.

Each structure has its own characteristics and has its own unique effects on people. The very first glance impacts the observer the most. As Halonen (2010) put it, learning is closely linked to function of vision that happens spontaneously in the human brain. One of the variables that can cause the correct process is lamination or it can convey negative emotions to the audience.

As it is described in (Aalto, 2010), types of atmosphere to be designed should be defied before the actual implementation;

Work spaces: spaces where accessibility is the central feature that drives the designer's work, where the rules of vision and ergonomics, protection and connectivity are the main aspects to be met.

Spaces planned for exhibits and sales: spaces where the picture, whether true to the truth or far from fact, interactive, interesting, is the most critical requirement.

Spaces built for residence and tourism: spaces where the need for warmth, enjoyment, artistic value, status symbol can satisfy sun.

The problem of lighting for the show and museum spaces is very special. This is important for the understanding of space, displays and works of art and the synthesis of them all. The focus of this research is on spaces for museums and exhibits. The most regarded scenario at the outset was the work exhibited.

But the house is now deemed to be a part of the show process for days. It means that the entire architectural elements are treated as the art pieces, both inside and outside the house, and have their position in the last remark of the tourist about their visit. Designing a gallery room has gone farther than exhibiting artworks, as can be seen. One of the most powerful components of architecture is illumination. It is more than about setting up some lighting equipment now.

3.7.3.1 Types of Lighting

- **Daylight**

Daylight is most main light source in museums. Although direct sunlight can be harmful on works of art, it should be fully regulated to be accessible.

Sunlight should still be locked out because lead certain irrecoverable consequences are triggered by UV illumination, such as decoloring the artwork, shading and deformation of photographs. Daylight may be allowed by various alternatives inside the museum building. Using reflectors such as clerestory and light racks, side lighting, top lighting (Hancock, Hinchliff, Hohmann, 2009, P.5).

- **Artificial lighting**

Over time, illumination sources have been altered and expanded. The lighting industry is motivated to manufacture more sustainable and long-lived lighting fixtures by factors such as economic challenges and the value of saving energy. Subsequently, the collection of lighting tools will be listed and the most frequently used sources, LEDs and fiber optics, will be described.

Figure 3.16: LED Fiber Optic Museum Lighting (indiamart.com)

Led lights are very common in museum design. Compared to incandescent lamps, they require less electricity to illuminate and also emit the light directionally. It is also beneficial to conserve electricity and it wastes less energy to be lit.. In museum and exhibition lighting design, LEDs are more popular; they can have very small sizes and different shapes.

3.7.3.2 Adaption of Light Sources

The direction, size and position of the light source will make the objects interacting with the light vary in perspective. It may make it feel larger or smaller, darker or lighter in a room. It is important to have the knowledge of how to do it in a perfect and appropriate manner (Figure 3.13). Various lighting tools are designed in museums to display the art works or to illuminate the room for as a part of general lighting.

Figure 3.17 : Light and Perception of Objects (researchgate.net)

3.7.4 Finishing Materials

Because of many different aspects, designers must be dominant over the performance of the material and its characteristics, especially important in museum design as a cultural place. Here, materials will first be explained and then with precise examples, those used in museum spaces will be written and explained.

The material's origin is associated with the history of construction. They have been used throughout the history of human beings. The very first men used to make their dwellings using the resources around them. Therefore, the content is changing, not the

substance of the 'material' term. The first houses were built of straw, according to Vitruvius, the Roman architect.

All the early materials for building were *clay, mud, uncut rocks, stones and wood*. Trying to develop new materials has improved by enhancing science. More advanced materials were required by civilized humanity to construct its buildings. Therefore, it has produced something between cement and concrete. Concrete in dry mood is strong, but in case of moisture, reinforcement was required. Then came new alloys that were more corrosion-resistant.

Plastics are relatively new materials with some gains; they can be conveniently molded and they cost less. *Glass* is another material that has been preferred by the designers on both the exterior and interior of a building since its invention because of its clarity and decorative aspects. A composite that is a blend of various types of substances is another usable one. In comparison with priority materials, strength, persistence and its lower weight, it has some dominance (Mavvis, 2008).

Green design is in progress these days and has dominated the most variety of designs. The goal of sustainable architecture is green building design and materials, since much of the renewable products can be used in nature and economy.

Depending on the location and atmospheric conditions, a material can allow the building for a longer time to be better safe from environmental factors. In this sector, floor covering has the most significant function. It should be selected in such a way that noise and humidity indoors are minimized.

Reducing the sound pollution caused by walking is the most obvious advantage of carpets. In temporary expositions and museums that have many visitors during the day, they are good choices. They are resistant to chemicals and UV exposure by having nylon as a component (Fig 3.14) (National Park Service, 2001).

Figure 3.18: Using Carpet in The Jewish Museum, NY. Photo by: David Heald. (thejewishmuseum.org)

PVC (polyvinyl chloride), another material which requires low maintenance, water resistance, easy cleaning, low cost with different colors. The risk of using PVC has also become more visible as time has passed. PVC has some particles that can cause cancer of the lungs. Instead of PVC, there are some alternatives available, the most used of which is linoleum, a natural material. (Figure 3.15) (Woolley, et. Al., 1998).

Figure 3.19: Eureka Museum (paynterscontractflooring.co.uk)

Stone and parquet flooring are other alternatives. Stone is a material that is extremely durable, but it can't be renewed. The parquet is made from recyclable materials. It can be made from timber from hardwoods, but for a long time it is not expected to be viable (Fig 3.21) (Woolley.et al, 1998).

Figure 3.20 : The Use of Parquet (ostrohcastle.com) and Stone (vermontstructuralslate.com) in Museum Space

It is possible to call linoleum as the greenest commodity. There are benefits and pitfalls of both of these materials. Due to certain environmental variables, they have been compared (Figure 3.17) (Woolley et al., 1998).

Figure 3. 21: Linoleum Flooring into M HKA - Museum of Contemporary Art (archello.com)

Durable and renewable products have been commonly regarded as the environment goes for sustainability. One of the ways for reuse is recycling or reusing current products. Concrete is one of these components. Lately, among design professionals and architects, adaptive reuse of old buildings is a sticky subject. More in sight are industrial, abandoned sites. Owing to its hard and pressure-resistant qualities, most of its floors are paved with concrete. *Stained concrete* in commercial construction is the smooth shape of raw concrete. It is a renewable material; it reuses the present material which needs less manpower and upkeep. In addition, it has shining features; it is acid-stained, requires low maintenance, easy to vacuum, non-slippery, reduces the amount of dust and allergies, not easy to itch, long-life, and enhances (reflective) natural light. In addition, it is not gray anymore; there are different colors and patterns available. It can be quickly modified and something can be put on it so it increases the integrity of construction. It is a suitable substitute for carpets (Modern Crete Concrete Design, 2013).

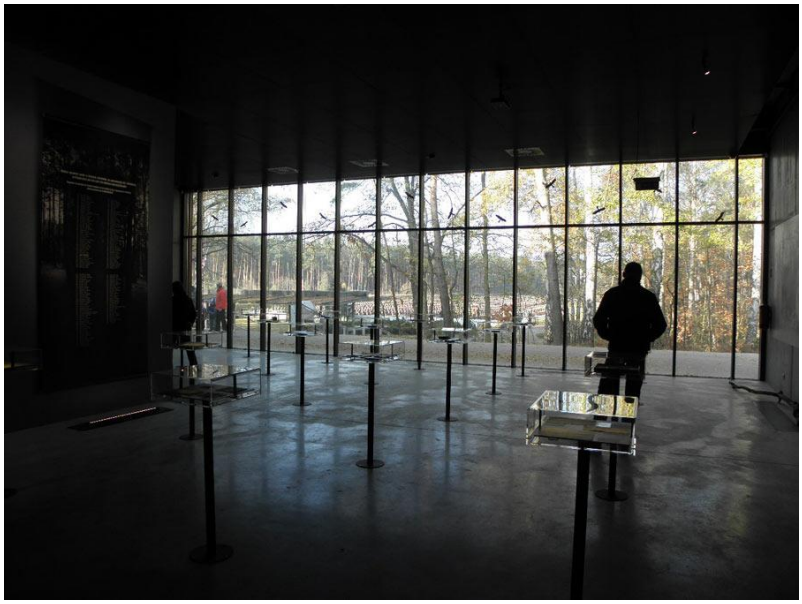

Figure 3.22: Concrete Flooring (Bautech DST Hardened Concrete floor, Dark-Grey) (bautech.eu)

Another element in furnishing is wall and ceiling shielding. They may vary by type of museum. Many content options would be possible for construction by being predominant over these variables.

Figure 3.23: Space Dividers (2009 guide)

3.7.5 Display Units and Furniture

The showcase or display unit is an important part of museum design. Glass and steel are most commonly used materials for display unit design. Safety reasons are also very important in material selection. Types of display elements;

Self-standing units or in the center of the gallery's space, middle floor cases are mounted. It is completely open and can be seen from both directions. Its structure varies because of the shape and scale of vertical and horizontal objects (Figure 3.20 & 3.21).

Figure 3.24: Self-Standing Central Display Unit, Vertical Case (Speed Art Museum, KY, USA) (zonedisplaycases.com)

Figure 3.25: Self-Standing Central Unit, Horizontal Case (The Allenton Hippo at Derby Museum) (accessdisplays.co.uk)

Wall and **Corner units,** are not self-standing and they need a structure to be mounted on (Figure 3.27 & 3.28).

Figure 3.26: Wall Mounted Display Cases, Louvre Museum (louvre.fr/en)

Figure 3.27: Shelf unit (The Museum of Things, Berlin) (worldarchitecture.org)

Platforms of display are the big cases that are standing on the floor. They are to accommodate big items. Things that are vulnerable to injury are positioned on a nearby platform. It is a sealed case with partitions consisting of glass. In an open platform device, other large items that are more immune to harm are installed (Figure 3.24).

Figure 3.28: Close Display Platform (en.chnmuseum.cn)

Interactive display units are a fusion of art and technology. For tourists to communicate with the museum personally, they prepare a forum. For this unit, there is no defined form. Because of the function and need it is seen in several different forms (Figure 3.25 & 3.26).

Figure 3.29: Interactive units, Santral Istanbul Museum, Turkey (tripadvisor.co.uk)

3.7.6 Security

All items displayed in a museum must be securely protected, inside and outside. Additionally, individuals should also be protected against any danger that can occur. The price of the item determines the degree of protection required. Nonetheless the structure itself should be well covered from various kinds of injuries.

In museum locations, there are two forms of security available: "object's safety" and "people's safety". To achieve the best protection scheme, each of them should be thought-out in tandem.

3.7.6.1 Safety of Objects

All objects within a museum must be kept safe, from fire, from "stealing, vandalism, fraud" or unintentionally, such as "arson, floods, smashing or striking, touching and chemicals" or purposely.

The most minor occurrence which can kill the entire set and inflict permanent harm is fire. Many fires arise when there is a lack of focus. In order to reduce the possibility of propagation, fire safety is very significant part of security.

Museum objects are often in danger of robbery (Fig 3.27). To avoid quick escape during the night time, doors must be locked (The Council for Museums, Archives and Libraries, 2003). The architecture of the museum needs to be planned to have the best protection without restricting visits to the collections. The best sight of the guard system and surveillance cameras should be on routes and areas.

Figure 3.30: Secured Window, Nelson Mandela Museum in Mthatha in South Africa (trellidor.co.za)

Paintings are items that are suitable for elegant burglars because they can be transferred out easily (Figure 3.31 - 3.32). In order to reduce the likelihood of unintentional visitor contact and to identify the real disruptions, special care is necessary in terms of design (Figure 3.33).

Figure 3.31: Louvre Museum (thetourguy.com)

Figure 3.32: Louvre Museum (wnycstudios.org)

Figure 3.33: Louvre Museum (commons.wikimedia.org)

Figure 3.34: Protective Fence, University Museum, Krakow in Southern Poland, Aug-Nov 2018 (djaquet.info/blog/2018)

In exhibiting areas, display cases are very common. They are glass boxes holding items like their height, their archaism, and their importance that have unique status (Figure 3.32). Safety related matters as stated in "The Council for Museums, Archives and Libraries", 2003, which will be published below, discusses certain considerations regarding these instances.

- Locks; the case lock of the show should be robust and un-theft and shielded from views.
- Framing; hard wood, aluminum and steel are the most used types of material to make the frames. Above everything, steel can be twisted; it is resistant and shatterproof and cannot be readily distorted. For important collections, it's recommended.
- Glazing; glass material is the most important component in this event. Due to their delicate character, which is dangerous, standard glasses are not favored. For show cases, laminates-break but do not explode-and anti-bandit-bullet resistant-are the better styles.

Figure 3.35: Display Case, Crocker Museum, Exhibit, Sacramento, California, 2010 (gizmosf.com)

3.7.6.2 Safety of People

Another critical aspect of museum protection is to protect people during their visits from some sort of damage and to allocate the best available remedy for their benefit. Some of these protections are building security, which includes the building's physical system.

A successful evacuation service must be accessible in the event of fire, emergency exits should be visible and alarms should be designed accordingly. In the event of heavy smoke, visible light bands on the floor are critical. Two options that will allow individuals to leave the museum faster are elevators and escalators. In addition, in a lecture for a course in Museum and Exhibition Architecture, 2012, B. In the museum and exhibition sections.

3.7.7 Environmental Factors

The fact that a museum is available is attributed to its collections. First of all, it is crucial to be predominant on issues such as the content of the set and its type. They need to be prevented from degrading. The act of decay is the incremental destruction of objects that results by their contact with their surroundings.

The museum atmosphere is influenced by certain decaying agents; pollutants will discolor, corrode and destroy all forms of items. They can be gases such as hydrogen sulfide, liquids such as human hand fat or solids such as ashes. Yet air will collectively include all forms of pollutants. The colored items may even darken or face unwanted light, such as UV (museum handbook, 1999). Overall, the cause for the degradation of the collections may be four major factors:

- Temperature
- Relative humidity (RH)
- Pests
- Pollutants
- Where the temperature is adjusted:
- It is not necessary to open doors and windows, but when required.
- The degree of temperature must be constant to avoid abrupt changes

- Using lamps with less potential to generate heat
- If necessary, 2 doors can be used for entry (Cassar, 2000).

Relative humidity (RH) is related inversely to temperature. As the temperature increases, Rh decreases, and when the temperature drops, it rises (Museum handbook, 1999).

As is apparent, there is a relationship between temperature and relative humidity. Both have an impact on the climate of the museum and must be as constant as possible. In addition to any interior concern, it should be noted "What sort of environment does the museum area have or would be established in the city?" 'Is it dry, hot, cold or tropical? Then to prepare a suitable atmosphere for them the essence of each item in the set should be taken care of. It will help to predict unexpected incidents and to avoid them.

Pests are a species of insects or animals that as their meal, feed objects and the soil surrounding them. In the museum environment, they have disruptive consequences. Any of these bad effects are destroying objects, piercing them, or moldering them. In addition to their destructive impression on items, they have certain precarious effects on the health of humans. Some situations should be undertaken in order to avoid the spread of insects.

Pollutants such as ash, soot and soil, disfigure products by collecting moisture or serving as a source of pollutant for food; even human hand fat can readily be spread to collections (Oxford university library services, 2005). The most destructive effect of all is that of gaseous pollutants. However, by becoming mindful of the influence of temperature and humidity on museum items, they must both be monitored at the same

time. Since contaminants are merely regulated, degradation of shape cannot be avoided.

In galleries and museums, there is no minimum level for contaminants. They cannot be easily assessed and costs for pollutant testing are high; not all monitoring is performed by the museum. Most of the calculations on sun, temperature and humidity are carried out. Gaseous and particulate pollutant parameters, since they are difficult to quantify, are less measured and defined (Keene, 2002).

3.8 Summary of the Chapter

In this chapter, the museum definition was first described and the history of the museum was narrowly explained. Then, numerous styles of museums were thoroughly discussed, particularly contemporary art museums.

The architecture of the museum buildings was explained and explored. Furthermore, some of the features of interior design that play a major role in designing a museum have been listed and described. Therefore, as suggested in this chapter, these interior design considerations should undoubtedly be listed. Lacking any of these variables will give the museum a major flaw and lead it to failure. While each museum building has its own traits and identity, it is possible to establish certain general rules and regulations for them as a whole. Consequently, case studies will be presented and evaluated in the next chapter with the data expressed above.

Chapter 4

CASE STUDIES AND ANALYSIS

4.1 Chapter Introduction

Industrial heritage has features that distinguish from other areas of heritage. An interdisciplinary subject that has environmental, civil engineering, architectural and historical dimensions. Special characteristics of this typology includes functionalism, flexibility, adherence to theory, belonging to an international style of global value, identity and social value for society, technical and scientific value and structural features depending on simple geometry, and exposed use of raw materials such as brick and concrete. The stated reasons and many more highlight the need to protect industrial heritage sites. Protecting industrial complexes and improving their surroundings can only be achieved through a process that links the heritage values with the contemporary requirements (Toloe Ashtiani, 2006).

Historical assets and contemporary needs should both be considered together with the change of use of industrial areas in order to protect and preserve industrial heritage, also for sustainable development. According to the literature reviews conducted in the previous sections, in addition to issues related to conservation and adaptive reuse of these industrial heritage buildings, 7 effective factors are determined to evaluate the reuse of selected case-study buildings, these factors are:

1. plan schema
2. circulation and accessibility
3. color and lighting
4. finishing material
5. furniture and fixtures
6. Security
7. Environmental factors.

Also, in order to investigate the mentioned factors, 8 case-study buildings that were part of the industrial heritage in Europe and have now been turned into museums or art galleries are selected as case studies for analysis and evaluation. These buildings are:

1. Tate Modern, London, UK.
2. Baltic Centre for Contemporary Art, London, UK.
3. The Musée D'Orsay, Paris, France.
4. Fondazione Prada, Milan, Italy.
5. Kuppersmuele Museum, Germany.
6. Lanitis Centre, Limassol, Cyprus.
7. NIMAC (Nicosia Municipal Arts Centre), Nicosia, Cyprus.
8. Istanbul Museum of Modern Arts, Istanbul, Turkey.

The following table lists 8 case-studies of this research related to the industrial heritage buildings that are transformed into museums. In this table, items such as old and new uses of these buildings and a brief explanation of each of them are given. By examining the factors affecting the interior design of each of them and comparing all eight projects with each other, we will find the similarities and differences in the impact of

these factors in different projects, and therefore the most influential factors in interior design are identified.

Table 4. 1: Lists 8 Case-Studies Related to the Industrial Heritage Buildings that Are Transformed into Museums

CASE	PROJECT	LAST FUNCTION / YEAR	NEW FUNCTION / YEAR	LOCATION	AREA / m^2	ARCHITECT(S)	BRIEF DESCRIPTION	Image
1	TATE MODERN	The former Bankside Power Station / 1947	Art Gallery/2000	England / London	34,500 sqm	Herzog & de Meuron	Tate Modern is a contemporary art museum in London. It belongs to the Tate Group which is known as the National Gallery of British International Modern Art (along with Tate England, Tate Liverpool, Tate St Ives and Tate Online). The plant is based in the Bankside district of Southwark, London, at Bankside Power Station. Since 1900 to the present, Tate has housed the British National Art Collection.	
2	Baltic Centre for Contemporary Art	Flour mill / 1950	Centre for Contemporary Art / 2002	England / Gateshead	3000 sqm	Williams Architects	The Baltic Center for Contemporary Art (simply known as the Baltic, stylized known as the BALTIC) is a center for contemporary art located on the south bank of the River Tyne next to the Gateshead Millennium Bridge in Gateshead, Tyne and Wear, England. Is. It hosts a constantly changing program of exhibitions and events, and has no permanent exhibitions. Opened in 2002 in a converted flour factory.	
3	The Musée d'Orsay	Train station / 1900	Museum / 1986	France / Paris	45.000 sqm	ACT Architecture	The Orsay Museum (French: Musée d'Orsay) is one of the most famous museums in Paris and one of the most important museums of painting and sculpture in the world. The museum is located on the left bank of the Seine and is the site of the former Paris train station. The museum houses French art from 1848 to 1914. The museum's works include paintings, sculptures, photographs and furniture.	

4	Fondazione Prada	Distillery dating / 1910	institution dedicated to contemporary art and culture / 2015	Italy / Milan	19000 sqm	Rom Koolhaas	The Prada Foundation's Milan, designed by OMA Architects, led by Rom Koolhaas, is expanding its spatial typology repertoire where art can be displayed and shared with the public. This feature, with a detailed architectural configuration that combines existing buildings and three new buildings (platform, cinema and tower), is the result of the evolution of a distillery dating back to the 10th century.	
5	Museum Küppersmühle	Warehouse/ 1781	Museum / 1999	Germany / Ruhr metropolis	3.600 sqm	Herzog & de Meuron	Several thousand square meters of exhibition space, a splendid collection of prominent artists from Anselm Kiefer to Gerhard Richter, a diverse exhibition program and stunning architecture that bridges the gap between industrial culture and the white cube - to the MKM Küppersmühle in the heart Located in the vibrant Inner Harbor area and celebrated as one of Germany's largest privately managed museums, MKM has been a cultural beacon throughout the Ruhr metropolis since its inception in 1999. The world-famous team of architects based in Basel, Herzog and de Meuron has turned the former mill and grain storage silo into an art museum, now with an exhibition space of about 3,600 square meters.	

6	Evagoras Lanitis Centre	Carob Mill / 1800	Carob museum / 2004	Cyprus / Limassol	2000 sqm	Christian Christou	Carnob Mill Complex, located in one of the most historic areas of Limassol between Limassol Marina and the medieval castle, was built in the late 1800s and used as a warehouse, and later became a carob factory in the late 1920s to 1960s. . The renovated building was renovated in 2000 and creates an environment that combines the original atmosphere of the past with the sophisticated look of today. The building consists of three venues suitable for hosting conferences and social events, international exhibitions and awards ceremonies, the Carnob Mill Museum, the Carnob Mill restaurants and a car park.	
7	NiMAC (Nicosia Municipal Arts Centre)	Old Powerhouse / 1855	Arts Centre / 1994	Cyprus / Nicosia	500 sqm	-	NiMAC [Nicosia Municipal Arts Centre, Associated with the Pierides Foundation] is situated in the restored Old Powerhouse building in Nicosia's historical center. NiMAC was established on January 14, 1994, and it is the island's oldest and largest Contemporary Art Centre.	
8	Museum of Modern Art	Warehouse / 1896	Museum / 2017	Turkey / Istanbul	8.000	Tabanlıoğlu Architects	The Museum of Modern Arts in Istanbul is the first private museum dedicated to contemporary art in Turkey. It was launched in 2004 by the affluent Eczabaşı family on the shore of the Bosporus. The occupied area is almost 8000 square meters (Polo, 2013). Tabanlioglu, who is a very famous architect in Turkey, has redesigned and adapted it(Figure 4.1 & 4.2).	

4.2 Method of Analysis

Buildings that modified for a museum would be firstly evaluated according to issues related to conservation and adaptive reuse of these industrial heritage buildings, and the evaluation will be followed on the basis of the below-stated factors of interior design;

1. Plan schema
2. Circulation and accessibility
3. Color and lighting
4. Finishing materials
5. Furniture and fixture
6. Security
7. Environmental factors.

Due to the best usage of interior space and their success, contemporary art museums were selected from all the cases available. They will be evaluated according to interior design characteristics that are plan schema, circulation and accessibility, color and lighting, finishing materials, furniture and fixture, security, and environmental factors. Information about these buildings has been collected based on documentary and library studies and on the web.

4.2.1 Tate Modern

Tate Modern first opened its doors in the year 2000. The structure was originally a power plant, with a massive central hall housing energy-generating turbines and five million liters of oil stored in massive concrete tanks. In 2016, the Blavatnik Building, with 10 new floors and Oil Tanks, was converted into performance art and film spaces. The Tate Modern is located in a former factory building on the south bank of the River

Thames, directly across the millennium bridge from St Paul's Cathedral and next to the Shakespeare Globe in London. The Millennium Bridge, designed by Norman Foster, links the new gallery to the city center and, in particular, the cathedral.

For centuries, the area south of the River Thames has been synonymous with industry, entertainment (the Rose and Globe Theaters), and large populations living in poor conditions. However, when the theaters left and port activities moved east of the city, the once crowded area was shut down. Years after the Great War, new infrastructure was needed, and a bewildering decision was made to build a power plant right in front of St. Paul's Cathedral, an example of ordinary urbanization not found in many European countries except Britain.

The result was a practical and precise brick shed built by the Pure Energy Cathedral by architect Giles Gilbert Scott to be compared to the famous London Cathedral. The tower overlooking the Thames, overlooking the city of London, the power plant soon became one of the city's most prominent structures, operating for more than thirty years until rising oil prices shut it down in 1981 and make the building understandable. Empty and slowly spoiled. . Bankside's urban fabric needed a new catalyst.

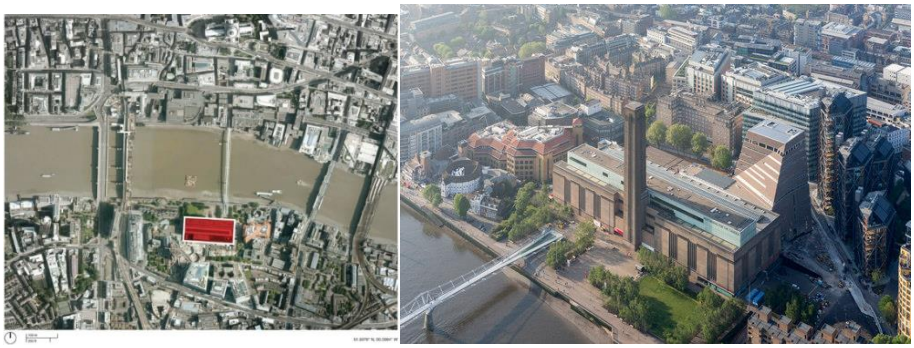

Figure 4.1: Tate Modern Photographe : Iwan Baan 2018

Henry Tate and other 19th-century art advocates saw the proper functioning of a museum building as a kind of mental or elevation preparation for the experience of seeing the art in it. It was necessary to create a suitable, dignified and imposing atmosphere for the civilization project. Although the art exhibition was an important function of the museum building, it was not the only one. Monument and dignity were the hallmarks of a museum building. For Tate, the choice of site and design reflects the nationalist goals and political pressures of the time.

In 1994, the Sese Tate Institute called for a short competition and asked architects to turn the extra power plant in London's Bankside into a whole new art space for the 21st century. As is well known, this competition led to the appointment of the relatively young and relatively unknown Swiss architects Herzog and de Mauron in those days.

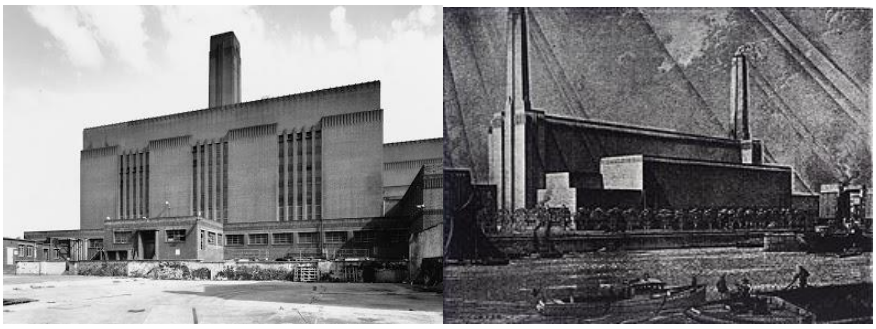

Figure 4.2: London's Bankside

Tate briefly mentioned three spatial models as important factors for thinking about the new artistic space. The first two, which are explicitly classified as "urban," are the Museum of Modern Art in New York and the Pompidou Center in Paris. The former as "a collection of quasi-homemaker rooms with artificial lighting" and the latter as "open floor space, each of which is unlimitedly adapted to new technologies and new uses over time.

As the plant shut down, Tate Gallery was working with architect James Sterling on a new master plan focusing on expanding the overcrowded facilities at Millbank. After reviewing the proposal, Tate trustees agreed that the current site did not provide enough exhibition space for the gallery's current and anticipated needs, and concluded that another site should be found in London. Fortunately, Side Bank had real estate in stock. As Tate Trustee Michael Craig-Martin Explains, "The new site (the old power plant) met all the criteria for search control: a unique location in central London on a large scale, excellent transport facilities, the possibility of connecting a river boat with Gallery at Millbank, and immediate access to development ".

A free international competition continued, in particular the question of how to deal with the existing building and its location in the urban context. About 150 architects entered the competition, but the final architect (H&DM) had only one proposal that fully accepted the existing building - its shape, materials and industrial specifications. By reusing the existing power plant, the architects argued that Tate lacked the memorable form and signature that is essential in contemporary cultural design. They easily borrow it from the old building - adapted - and focus on the quality and connectivity of public spaces.

Figure 4.3: Tate's Modern Extension

4.2.1.1 Plan Schema- Functional Schema

The Bankside power plant was strongly opposed at the time of its construction. The height of the ridge was limited to 99 meters to prevent it from being higher than St. Paul's Cathedral. It was built in two stages, the west side being the first to be built for energy production in late 1952, but it was not completed until 1963. The center closed in 1981 and the building was abandoned, often due to speculation about property, threats of demolition, in fact began demolition in 1993, which was eventually suspended with the intervention of the BBC. In 1994, Tate announced the purchase of Bankside Station and organized an international competition to modernize Tate.

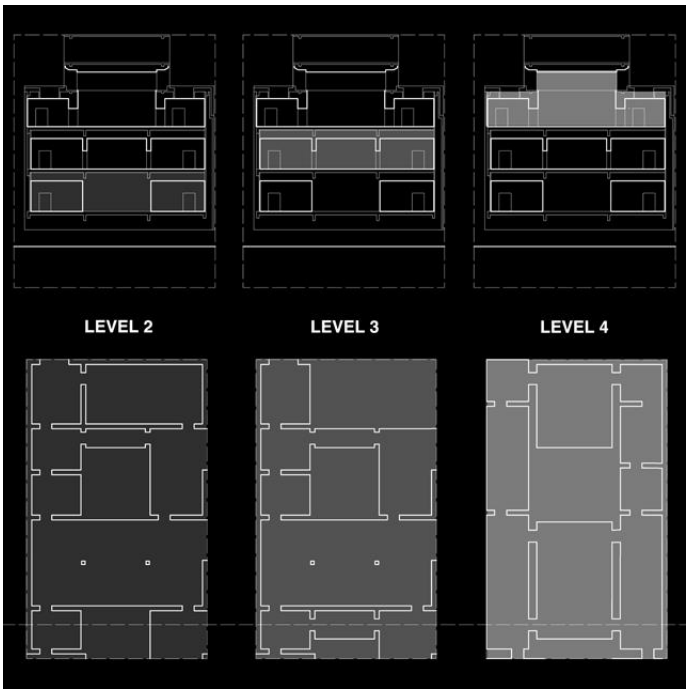

Figure 4.4: Plan Schema- Functional Schema Plans and Sectional Diagrams Showing the Gallery Layouts on Levels 2, 3 & 4

The floors and the vertical circulation can be seen from the diagram below.

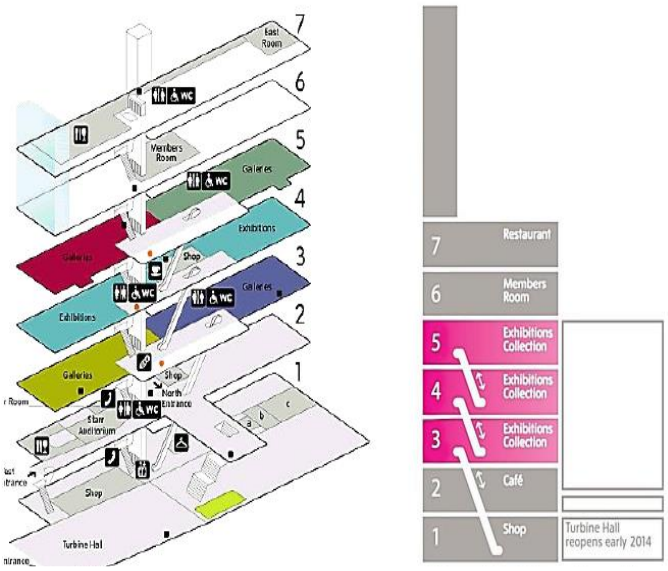

Figure 4.5: Tate Modern Gallery Plan Schema (Londra_Tate Modern, 2007)

The plant was conceived and designed in the 1940s by Mott, Hay and Anderson Engineering. While working on the design, the engineers recommended their client, London Electric Company, to an architectural consultant for advice on the exterior of the building. The architect of choice was Giles Gilbert Scott, also known for the neo-Gothic design of Liverpool Cathedral. For the power plant, Scott rejected the Neo-Gothic style, choosing "Art-Deco" instead. While Scott was designing the Art-Deco shell for the exterior, his engineering colleagues were distributing the massive set of machines in three separate areas inside. Each area, with its proper infrastructure of steel supports, stairs and access decks, is an important stage in the power generation process: boilers, turbines and electrical switching equipment. Herzog and de Meuron, in their interpretations of their design, often use mountain metaphors to refer to the scale and appearance of the massive carcass of the former power plant (Herzog & de Meuron, 2002: p209).

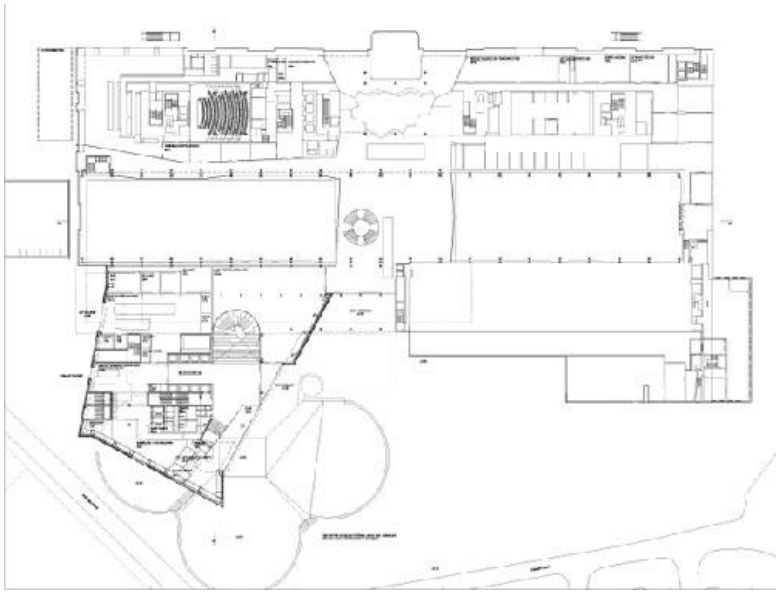

Figure 4.6: Tate Modern Gallery Plan Schema (Londra_Tate Modern, 2007)

But they also use the metaphor of the mountain in another sense, topography, where they refer to the mountain as a place of natural resources, with plenty of opportunity to walk and discover: I believe that neither art nor architecture is for our entertainment. They are not, but if you are interested, it can be like a mountain. You know, the mountain is boring, but if you look at it in a certain way, it can be amazing to you. You can walk on it, you can discover plants, different shades, different light. (Herzog, 2000: p52–53).

Part of the Bankside art space that gives visitors very little opportunity to make their own decisions, the famous room is now the Turbine, which has generally been agreed to surrender to the space and enjoy it as a show. But Tate's Bankside art space is by no means limited to the spectacular turbine room - there are three floors of gallery collections in this conversion. They are commonly used in galleries, with murals, slate sculptures, specific objects on the floor, and movies and films in dark rooms. Gallery collections are more resistant to landscape viewing, and therefore, I suggest that it be

more appropriate to explore the metaphorical meaning of architects' topography than the art space as a mountain.

Figure 4.7: Entry to Turbine Hall from the West, Slipping Below the Building(C KARLSON, 2020)

Figure 4.8: Turbine Hall, Tate Modern (Timotin, 2007)

The entrance to the museum is a huge open space that uses the turbine hall as it is and gives the visitor a good feeling (Metzger & Olsson, 2013). This area was long neglected and this project was seen as a part of a bigger regeneration project.

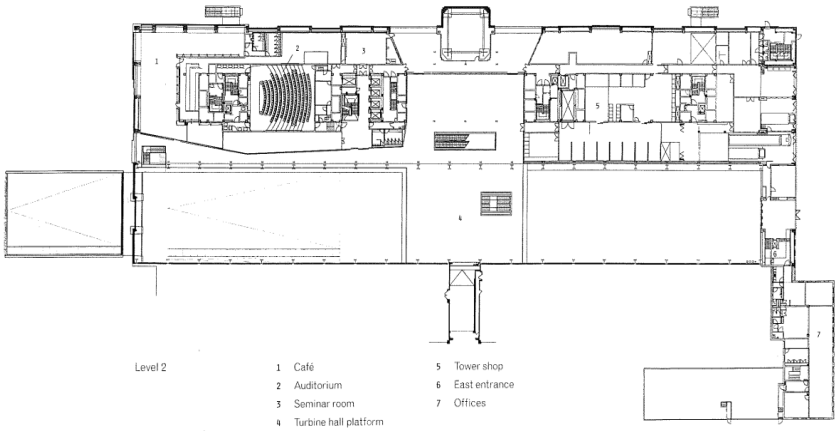

Figure 4.9: The Tate Modern‟s Plan (Powell, 1999)

Figure 4. 10: Turbine hall, Tate Modern (2016)

4.2.1.2 Circulation and Accessibility

The transformation of urban areas - from industry to culture - is a common denominator in today's urban regeneration strategies. However, Tate's success and appeal come from accepting Tate's past textual assignments, not for eternity, but for the ever-changing present.

Architects and site planners recall the old power station, recall the fate of the inconvenient industrial area, and - instead of throwing it away - increase the important urban connection, and put it as a previous prediction on a The modern city is accepted and organizes an area with winding streets, clusters of diverse spaces and patterns of development overlapping.

Now, with the addition of an ongoing proposal focusing on urban micro-development strategies, a direct north / south route across the Millennium Bridge is being developed through the Turbine Hall to the heart of Southwark.

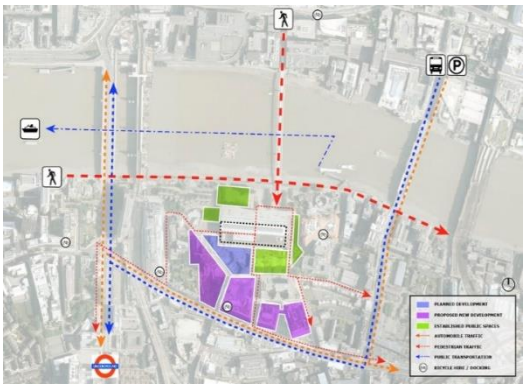

Figure 4.11: Circulation and Accessibility of Tate Modern

The exhibition area of the turbine hall is open plan arrangement. However, in other galleries, some partitions and walls are set up to categorize works of art due to different styles and years.

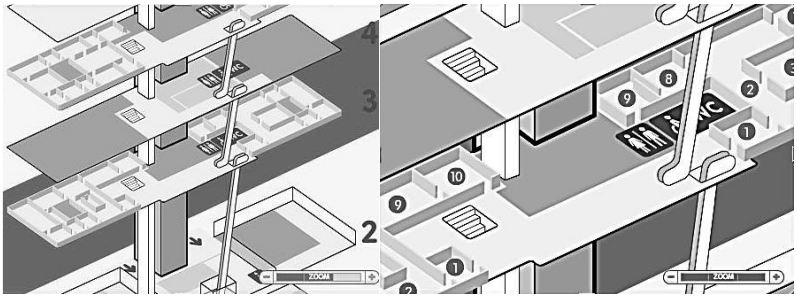

Figure 4.12: Tate Modern Circulation and Accessibility (Hill, 2008)

4.2.1.3 Color and Lighting

The lighting is closely integrated with the structure and other services, minimizing visual clutter and creating a scheme that is a considered part of the fabric rather than an afterthought. The lighting is mounted onto cable trunking installed between precast concrete ceiling panels, in a slot shared with sensors, smoke detectors, loudspeakers, sprinklers and CCTV. This integrated approach is used in all public spaces of the new building, which is largely characterized by exposed concrete structure. The concourse lighting scheme is adapted in each of the adjacent functional spaces in the tower, which all have similar exposed precast concrete ceilings. The learning spaces on Levels 5 and 6 are bathed with generous ambient light, using a similar system of linear fluorescent lighting, for maximum flexibility of use for these areas. The office spaces on the south side of Levels 3, 4, 5 and 6 use a tubular luminaire, selected to look similar to the bare fluorescent tubes whilst providing glare control for the working environment. LED cast-glass pendants, suspended from the same trunking between the pre-cast concrete panels, add character and sparkle to the dining areas – the Level 8 Members' Room and Level 9 Restaurant – without distracting from their spectacular views over London.

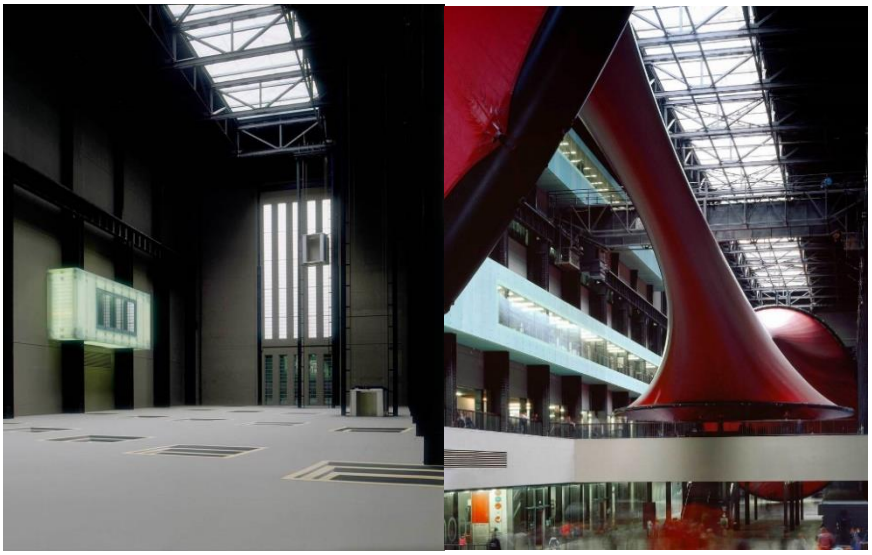

Figure 4.13: Ceiling Opening in Turbine Hall, Tate Modern (Image Marcus Leith Courtesy of Tate Modern, 2017

As you ascend from another level, opaque and prominent windows appear, which allow daylight.

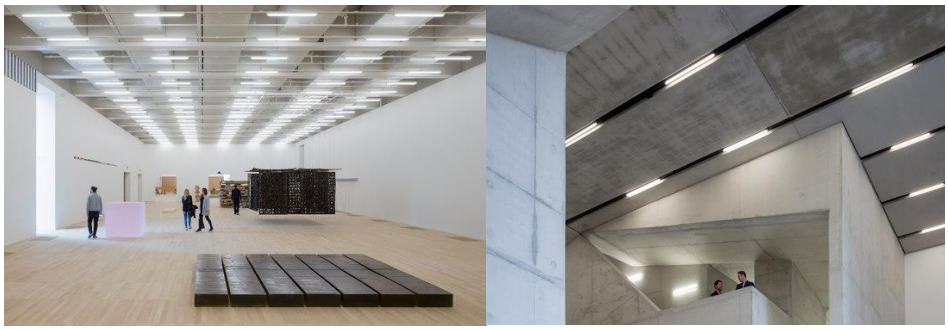

Figure 4.14: Lighting in Tate Modern Photographe : Iwan Baan , 2018 (www.architonic.co).

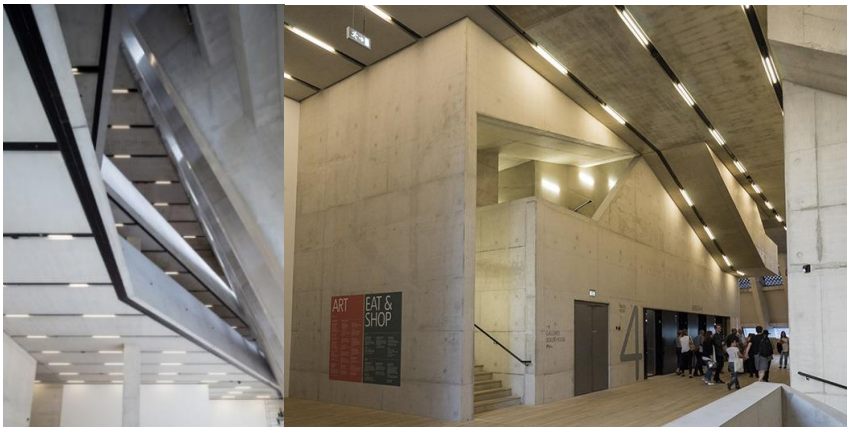

Figure 4.15: Lighting in Tate Modern Photographe : Iwan Baan , 2018 (www.architonic.co).

Glass pendants are also utilized in the Bar on Level 1, hinting at the dining spaces above with the same lighting and mirroring the Café at ground level in the existing Tate Modern, which also gains its character from distinctive pendant lighting. The Switch House includes a variety of new and diverse gallery spaces. The galleries on Level 3 are more intimate spaces than the others, with a lower ceiling height. The lighting of these galleries is also more intimate, using track and spotlights only to focus light on the walls and artworks. The lighting track is located between the beams in the ribbed ceilings. Spotlights mount into this track on an elongated stem designed to avoid ‘hot spots’ on the sides of the beams, whilst minimizing visual clutter by having the spotlights partially concealed by the beams. The larger galleries on Levels 2 and 4 are both provided with homogenous ambient light, as well as track and spotlights for flexibility. High color rendering linear fluorescent lighting is mounted on suspended lighting track on Level 2. This track follows the rhythm of the structural grid of the building, and forms a visual datum beneath the exposed ductwork and other services above. Uniform backlit ceilings give a calmer feel to the large gallery spaces on Level 4. These connect the new galleries stylistically to existing ones, accessible via a nearby bridge over the Turbine Hall.

The lighting control system also plays a significant role in minimising energy use. Daylight filters through the perforated brick façade and clear façade glazing throughout the new building, and the distribution of daylight was carefully analysed, assisting in developing the electric lighting scheme. Daylight- and/or occupancy-linked lighting control is extensively employed, ensuring that only as much light as required is used where and when it is needed.

4.2.1.4 Finishing Material

In the new design, where the combined elements of modern, old, and new Tate are expressed in general, we see that they come together and act as a single organism. Using the same basic palette of bricks and bricks in a completely fundamental way, we created a perforated brick plate through which light filters enter during the day and the building shines through at night.

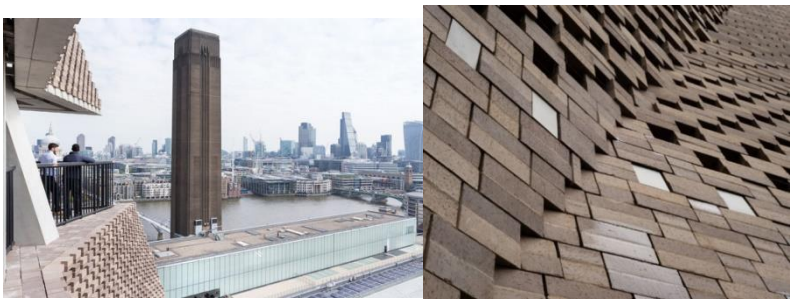

Figure 4.16: Finishing Façade Material on Tate Modern

Brickwork also reacts to inclined forms by stepping into approximate pure geometry. With both simple weaving and drilling operations, the brickwork is transformed from a massive solid into a veneer that covers the concrete structure of the new building.

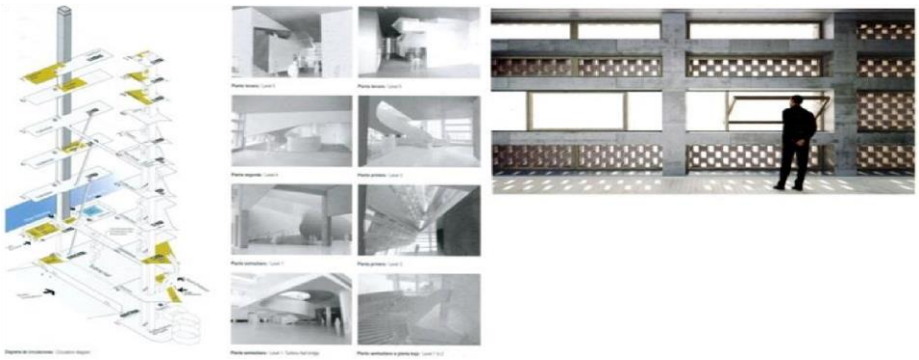

Figure 4.17: Tate Modern (Herzog & De Meuron 2005/2010)

Figure 4.18: Interiors at Tate Modern (Timotin, 2007) Accessed Hayatdawood 2014

4.2.1.5 Furniture and Fixture

Tate Modern combines a variety of modern arts and art displays.

Figure 4.19: Tate modern Furniture and Fixture Tate Modern (Olins, 2010) Tate King Walnut Slatted Bench

In addition to galleries, there are shops, cafeterias, meeting halls, study areas and restaurants overlooking the river. These versatile environments provide the ideal

position for Tate and Jasper Morrison armchairs and Elan sofas. Monforte benches, also designed by a London-based designer, are located throughout the exhibition halls to provide visitors with a moment of rest and relaxation as they move from one hall to another.

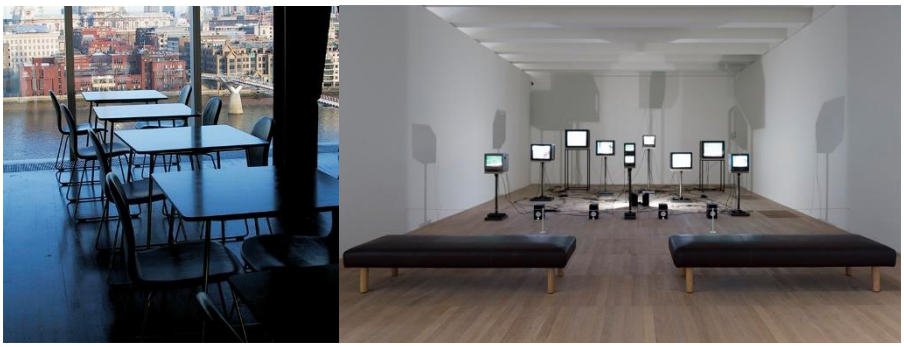

Figure 4.20: Tate Modern Furniture and Fixture Tate Modern (Olins, 2010)

4.2.1.6 Security

Tate Modern is concerned about security. They perform a variety of tasks to protect our guests, employees, collections, and property, such as random check bags and plainclothes security officers. They work closely with police project service teams, supporting police deployment on our sites and taking the initiative. A regular housekeeping schedule is essential to fire prevention (Liston et al., 1992). When collected, small fences are used as the main installation of the artwork to give visitors more attention to them. In addition, surveillance cameras in galleries are set up to protect works of art against lost theft.

Figure 4.21: Security in Tate modern

4.2.1.7 Environmental Factors

Tate recognizes that its activities affect the environment. As outlined in Tate's 2015 Environmental Sustainability Plan, Tate is committed to reducing that impact by taking action across our sphere of influence. Important areas that they took into consideration:

- Repair, install and remove installation of exhibitions
- Tate collection care and storage
- retail
- Catering
- Construction, operation and maintenance of the building
- Administrative processes.

4.2.1.8 Significant Characteristics/Features

Here we examine the items expressed with specific points in a general table. During which all factors are reviewed.

Table 4.2: Tate Modern- Significant Characteristics/Features

Factors	Significant Characteristics/Features
Conservation and Adaptive Re-use Approach	• Tate Modern has been one of the most significant examples of conservation of industrial heritage building where the most important elements belonging to the original use (Power Station) has been conserved, mainly the massive chimney, becoming the landmark for that part of the London City. Additionally the open

	plan and the characteristic materials such as the brick walls has been conserved intentionally.
Plan schema	• Floors : 7 • Long rectangular plan • Open plan organization or unstructured approach • Entrance to the building at two different height levels • The permanent collection of the museum • Temporary exhibitions • Restaurant on the last floor • Amazing view to the city • space with original shape
Circulation and accessibility	• Enormous open space Entrance • Central access to stairs and elevators • Two sides are connected with a bridge • Synchronous sequential motion of a certain direction • attempt at expansion and integration
Color and lighting	• opening on the ceiling in the main hall • Neon light arrangement is the dominant luminaire • The lighting is mounted onto cable trunking • The other levels, clerestory opaque windows • Levels 5 and 6 using a similar system of linear fluorescent lighting • The office spaces use a tubular luminaire • 42W Xicato Artist Series LED spotlights
Finishing materials	• Old and new Tate are expressed in general • Characterised by exposed concrete structure • The floor is covered oak wood and polished concrete
Furniture and fixture	• Furniture design is minimal and in harmony with contemporary art of the twentieth century. • Wooden benches (Tate King Walnut Slatted Bench) • Jasper Morrison’s signature Tate stools and chairs • Elan sofas • Monforte benches
Security	• Work closely with Police • Exit sing and fire alarm boxes • Sensors, smoke detectors, loudspeakers, sprinklers and CCTV
Environmental factors	• Perform as a single organism • Tate’s 2015 Vision and Strategic Environmental Sustainability • Key areas of environmental impact are: preparation, installation and commissioning of exhibitions / care and storage of the Tate complex / retail / catering / building construction, operation and maintenance / administrative processes.

4.2.2 Baltic Centre for Contemporary Art

Situated on the south bank of the river Tyne at Gateshead, England, BALTIC is a major international art center receiving more than six million visitors since its opening to the public in July 2002. BALTIC has an innovative, distinct network of shows and events, a world leader in contemporary visual arts presentation and launch. Located in an old industrial monument, BALTIC is 2600 m2 art room, making it the largest dedicated contemporary art institute in Britain. BALTIC has a global reputation for launching cutting-edge temporary exhibits. It has included works by over 300 artists from 52 countries in 183 exhibits to date, including renowned personalities such as Anish Kapoor.

The Baltic Center for Contemporary Art (BALTIC) is located on the south bank of the River Tyne and opened in 2002 as an "art factory".

Figure 4.22: Gelder and Kitchen (1939) New Flour Mills, Gateshead [Drawing]. Baltic Archive, Gateshead

Miles Miles (2004) identifies the historical significance of the Tien River as a "focal point for feeling in the Northeast," indicating that "with the impact of deindustrialization and the diminishing industrial role of the Tien, the revival seems to have replaced the Quayside as an alternative symbol." "It gives people in the area

something tangible to reassert their collective identity." In addition to stimulating a "degree of public confidence and regional pride", riverside helps to create a "feeling of well-being" in the Northeast, but also revitalizes the sense of community and improves the local economy.

According to Powers (1994), changes in British industry since 1980 "have severely damaged its buildings" and therefore argue that the area improvement approach should preserve only the remaining buildings at the Gateshead Wharf. Scott (2008, p. 145) argues that [change] results from a general desire to keep things as they are now. The justification is beyond the emotional range, the change of use, or the job required to bring a building or neighborhood to life, and so to ensure their continued survival in the city context.

Figure 4.23: Baltic Centre for Contemporary Art Situated Flickr

Cantacuzino (1975) noted that many industrial buildings have been demolished or abandoned instead of reusing since World War II in order to pave the way for more profitable development.

Figure 4.24: Steps of Building the Center

Morrison (2004) declared that "Most Baltic Center Coaches and the Wink Bridge" Link the Millennium Bridge to Tyneside Renewal as Much as They Previously Did to the Tyne Bridge "Undoubtedly the state of the BALTIC revival icon and its impact Announces the cultural heritage.

4.2.2.1 Plan Schema- Functional Schema

The need for a contemporary art space in Gateshead, on the other hand, was not specifically motivated by the vacant building; in particular, a variety of potential locations had been explored, with the Council largely favoring adaptive reuse as a policy. The silo building was spared for no other purpose than the cost of demolishing it, and it became Gateshead target for BALTIC.

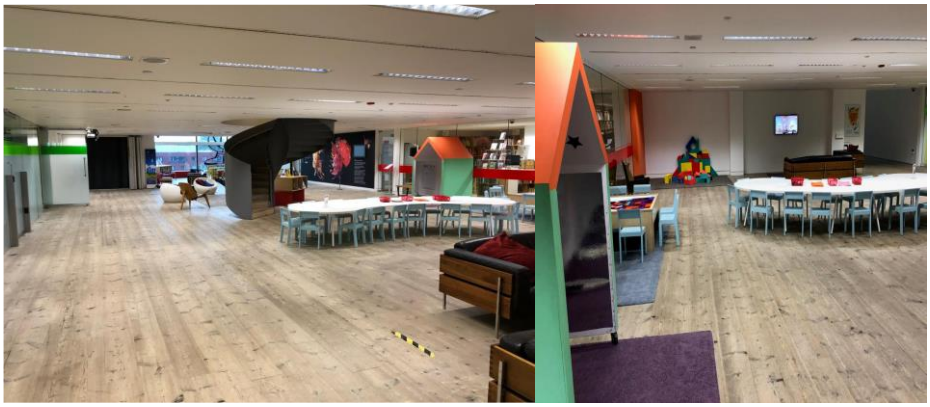

Figure 4.25: Image of Learning Lounge on Level 2

Figure 4.26: Ellwood, S. [Online]. Available at: https://www.chroniclelive.co.uk/in-your-area/gallery/readers-share-photos-baltic-turns-9676512 (Accessed 26 May 2021)

Where structural additions have been made, these are clearly visible. There are two outdoor terraces on the converted house. (at levels 1 and 4), as well as a two-storey 'viewing box' – described by Guest (2008, p.58) as 'one of the most distinctive features of BALTIC's exterior and one of the most popular interior features' – which cantilevers 7m from the west facade. The remodelled front elevation has also provided BALTIC with, arguably, one of its greatest assets: three glass lifts provide sensational views across the Tyne for the entire ascension from ground level to the rooftop restaurant at level 6 (Figure 4- 27).

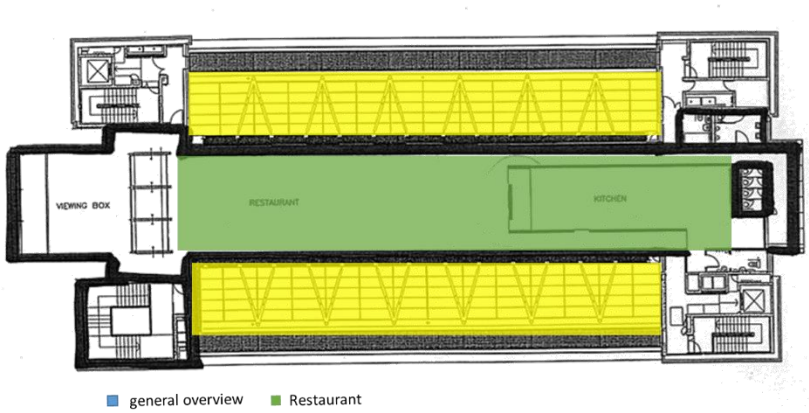

Figure 4.27: BALTIC Plan LEVEL 6 Image Source http://balticplus.uk/ Graphics by the author 2021

Foyers build generous 'orientation' spaces on each floor, acting as a bridge 'between art and not art' (Nordgren: 2019), With the Tyne-wide sightlines. This intervention visually connects the current use of the building to its historical background by the fusion of the inner gallery room with the river at all the building levels.

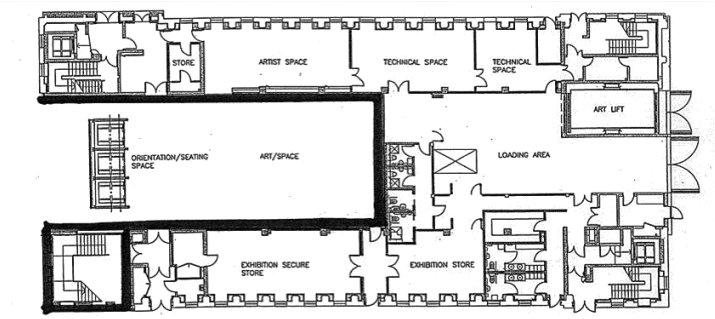

Figure 4.28: BALTIC Plan: Main Building Image Source http://balticplus.uk/ Graphics by the Author 2021

- With 2,600 square meters of art space, BALTIC is the UK's largest dedicated contemporary art institution.
- Level 1 of BALTIC houses a 300-person performance space as well as a purpose-built cinema.
- BALTIC's Level 2 contains a library of over 11,500 books on modern art and architecture.
- Level 3 holds an art room that has been carefully environmental controlled so that sensitive and delicate artworks can be shown without fear of harm from light, moisture, or changing temperatures.
- Level 4 is BALTIC’s largest art space with a huge floor area of 800 square meters.

Figure 4.29: BALTIC Open Submission: Virtual Exhibition (2020)

4.2.2.2 Circulation and Accessibility

At the South Bank of the Tyne River in Gates head, next to the Millennium Bridge, the BALTIC Center for Contemporary Art is located. The main entrance is on Baltic Square below the level of the street and is accompanied by steps and a ramp from South Shore Road. The street access via glass doors on the South Shore Road is also accessible halfway down the building.

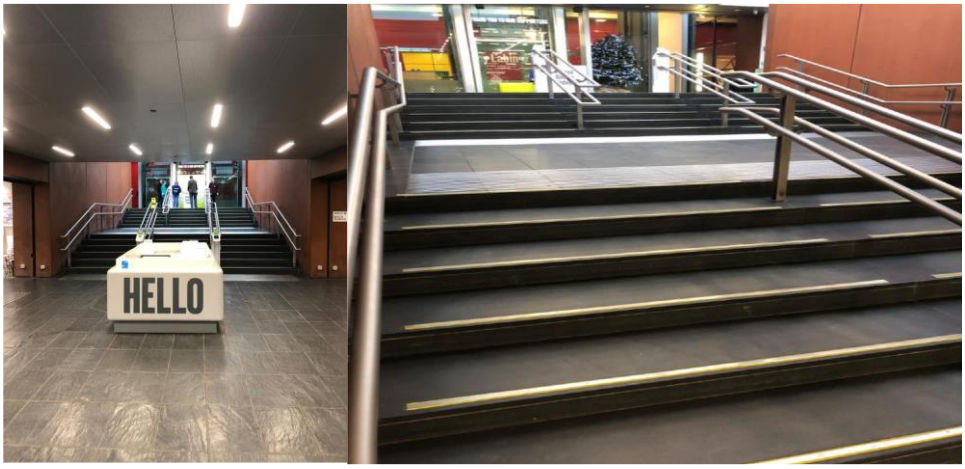

Figure 4.30: Entrance & Hello Desk on Baltic 2015

BALTIC has six floors, including galleries, a shop, café and a restaurant. There are lifts to all floors, and accessible toilets on all floors except Level 5. The Hello Desk is located in the main entrance of BALTIC. There is always a member of BALTIC Crew

located here who will be happy to help you with anything you may need. The Hello Desk offers printed information about the exhibitions, including Large Print guides.

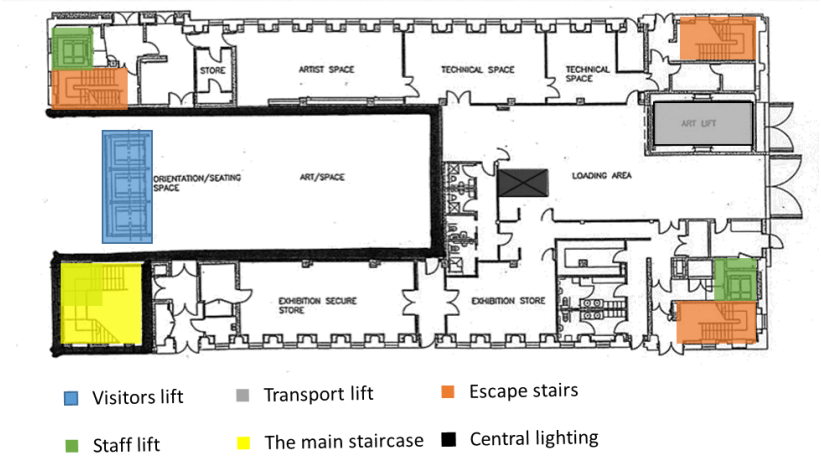

Figure 4.31: Vertical Circulation by Elevators and Stairs Image Source http://balticplus.uk/ Graphics by the author 2021

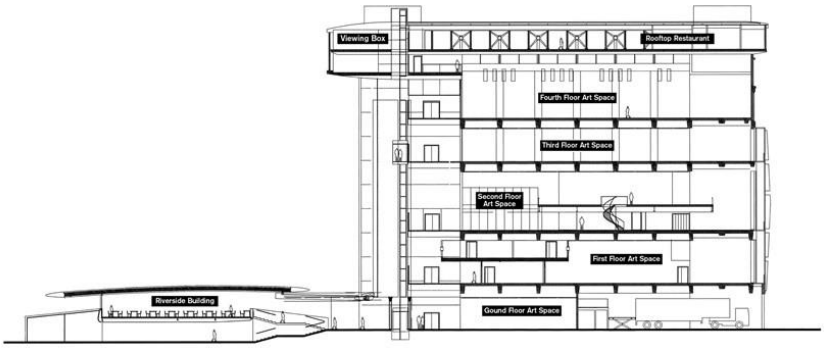

Figure 4.32: Section for Viewing Circulation

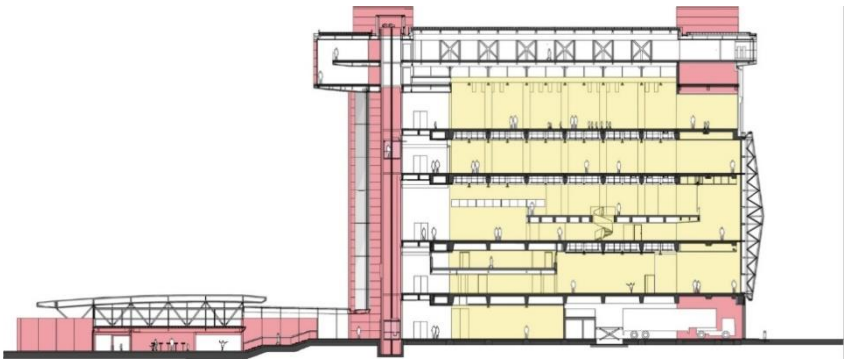

Figure 4.33: Section for viewing Circulation

You can request the use of a wheelchair, mobility scooter or tri-wheel walker at The Info Desk. There are walking stick stools available throughout the building which can be taken around the galleries. BALTIC Crew are aware of hidden disabilities and will provide assistance where possible.

There's always a member of BALTIC Crew at the Info Desk; they can tell you about the free daily tours that are taking place, as well as any special events that are happening during your visit. BALTIC Crew can also give information about exhibition so you can choose where to go. BALTIC is a member of the Visitor Attraction Quality Scheme, run by Visit England and ensures high quality experiences at tourist attractions.

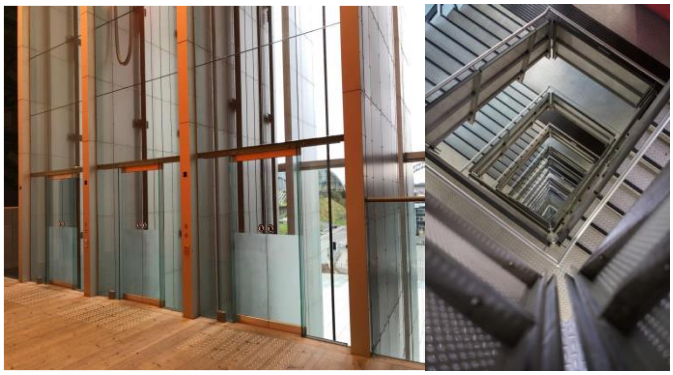

Figure 4.34: Vertical Circulation by Elevators and Stairs

4.2.2.3 Color and Lighting

Certain exhibitions may have low lighting. They have contrast markings on all glass doors and full height glass windows. Contemporary art often has different elements and environments. Lighting will vary according to each exhibition. In some situations crew members may have torches and emergency lighting, where possible crew member will adjust lighting if required.

Figure 4.35: BALTIC Unique ‘wing door ‘Source https://baltic.art/ 2021

Figure 4.36: Natural and Artificial Lighting from the Ceiling Source https://baltic.art/ 2021

4.2.2.4 Finishing Materials

Williams' anonymous entry surprised the jury by maintaining much of the external identity using the current masonry as an enveloping skin, where a new frame would be added – adding four new floor plates. A newly trained and virtually unknown architect. In the first place, this "remodeling" method involved the radical operation (Sudjic: 2002).

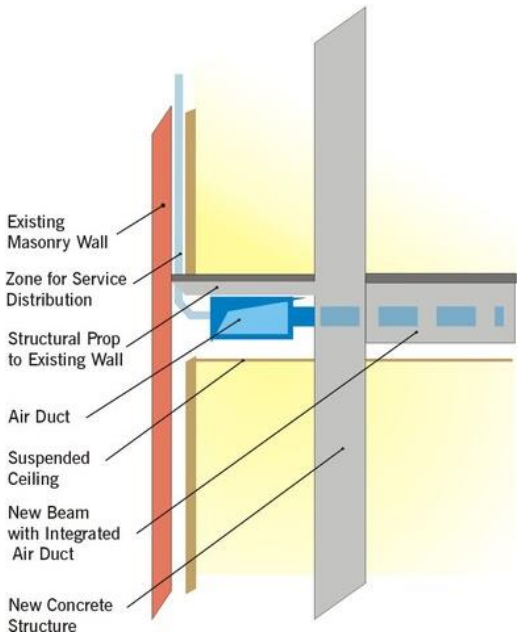

Figure 4.37: The Final Material and How to Connect the Exterior of the Building

The modern extension was thus placed between the north and south façades and two new, glazed east and west curtain walls. Robust materials such as rugged wood floors and stainless steel from Cor-Ten have been selected to refer to the manufacturing narrative of the area and to form spaces inside that are as esthetically powerful as the outside.

Figure 4.38: Finishing Materials in the Exterior and Interior

A total of 2500m2 of secret fix Optima SC4 hook-pin rainscreen cladding has been installed to the visitor centre walls and roof, gallery rooftop restaurant as well as to

ancillary buildings. In addition to the external rainscreen cladding, a further 2500m2 of anodised aluminium were provided to the internal elevator shafts.

4.2.2.5 Furniture and Fixture

The remarkable thing about the Baltic building is that, in the gallery space, there is no furniture and no place to sit, although in the visual and video art gallery, wooden benches are installed in a minimal way.

Figure 4.39: Installation View Arts Gallery and its Benches Photo by Rob Harris 2019

Cafe and restaurant furniture designed by Åke Axelsson. He is an interior architect, furniture designer and cabinet-maker with his own workshop. For decades he has designed public spaces ranging from the Swedish parliament to restaurants and the royal palace.

Figure 4.40: BALTIC Furniture Photographed in October 2001 Furniture Designed by Ake Axelsson, Photo Credit - Hannah Civico

He connected with the industrial heritage of the giant building. Baltic (2001), a chair made of steel and aluminium, was the central item of furniture, produced in a number of variants. Åke also designed café stools, counters made of flamed steel, and tables with free-from-knots birch tops. Eight large lorries carried the furniture from Sweden to Newcastle. The Baltic Centre was Åke's most extensive interior-design commission.

Figure 4.41: Baltic Center for Contemporary Art, ENGLAND Furniture Designed by Ake Axels son, Photo Credit - Hannah Civico

4.2.2.6 Security

Security in the Baltic center is provided by entrance gates, CCTV cameras, firefighting systems, and 4 staircases and 6 elevators in times of crisis. As well The Hello Desk is located in the main entrance of BALTIC. There is always a member of BALTIC Crew located here who will be happy to help you with anything you may need. The Hello Desk offers printed information about the exhibitions, including Large Print guides. You can request the use of a wheelchair, mobility scooter or tri-wheel walker at The Hello Desk. Other security systems include:

- There is a Hearing Loop system at the Hello Desk, as well as inside BALTIC Shop, BALTIC Kitchen and Six Restaurant.
- All BALTIC Crew have disability awareness training.

4.2.2.7 Environmental Factors

At the eastern end of the building is the central plant for the Baltic Flour Mill. The scheme involves trigeneration (combined heat & power), as well as absorption cooling and thermal discharge. This ensures a highly effective year-round generation of power in combination with building heating and cooling. In addition to the strong convenience, the gallery areas are conditioned by a displacement cooling system in the busy zone in large areas. Both air and water systems are heat recovery and regulated by variable speed. These have proven to be a successful investment, as arts buildings never run completely, and pump and fan power savings are exceptionally high. An open BMS system architecture controls all mechanical plants, most ventilation, fire and safety services. Environmental security.

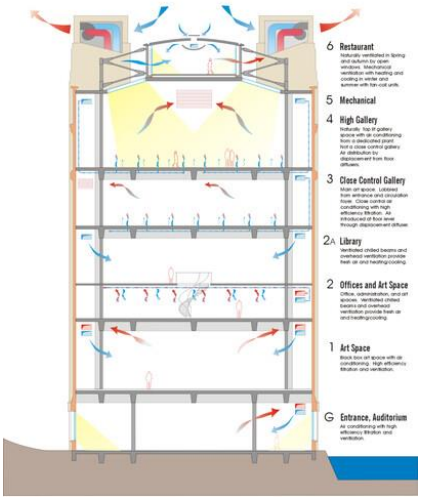

Figure 4.42: Baltic Building Air Conditioning Display www.baltic.co.uk

BALTIC ensured that for each tree felled another one was planted. Beyond the Ground Floor art space is an art handling and loading bay big enough to house a 40 tonne lorry.

The Spotlight Programme follows the Science-Based Target Initiative approach for reducing greenhouse gas emissions so that the global temperature rise does not exceed 1.5o Celsius, in accordance with the Intergovernmental Panel on Climate Change (IPCC) Special Report October 2018. In addition to setting a carbon reduction target, participants are each setting an energy intensity target for improving energy efficiency. In 2018/19 BALTIC Centre for Contemporary Art's carbon footprint from building energy use was 994.5 tonnes CO2e or 99.5 kg CO2e per m2. This is based on 4,158,055 kWh electricity and gas (or 416 kWh per m2), and their respective carbon intensities. As a participant of the Spotlight Programme, BALTIC is setting the following Environmental Impact Reduction Objectives for its building electricity and gas consumption:

4.2.2.8 Significant Characteristics/Features

Here we examine the items expressed with specific points in a general table. During which all factors are reviewed.

Table 4.3: Baltic Significant Characteristics/Features

Factors	Significant Characteristics/Features
Conservation and Adaptive Re-use Approach	• In this project, one of the widely accepted principles of architectural conservation, where all new additions should be clearly distinguished from the original structure, has been implemented. Accordingly, the contemporary extension, which was placed between the north and south façades, for instance, clearly stands out in between the brick walls.

Plan schema	• 2,600 square metres of art space • BALTIC has six floors, including galleries, a shop, café and a restaurant. • Local landmark • Two outdoor terraces (at levels 1 and 4) • Two-storey 'viewing box' • The most popular interior features • Foyers at each floor create generous 'orientation spaces' • Link the building's new use to its historical context • Very operational, functional and almost 'sterile' construction • Level1 of BALTIC holds a 300 capacity performance space and a purpose built cinema. • Level2 of BALTIC houses a library with over 11,500 books on contemporary art and design. • Level3 holds an art space which is carefully environmentally controlled so that sensitive and fragile artworks can be exhibited, free from the threat of damage from light, moisture or changing temperatures. • Level 4 is BALTIC's largest art space with a huge floor area of 800 square metres
Circulation nand accessibility	• The main entrance is located beneath street level on Baltic Square • Street level access is also available halfway along the building via glass doors • lifts to all floors • Hello Desk is located in the main entrance
Color and lighting	• exhibitions may have low lighting • full height glass windows • emergency lighting • a powerful light beam • The door slides across the windows to screen daylight • The wing door measures 21 metres high and weighs 11 tonnes
Finishing materials	• Using the existing masonry as an enveloping skin • Incorporating four new floor plates • Scooping out the internal silos • Retaining the concrete tubes as 'nostalgic' • two new glazed curtain walls to the east and west • Robust materials, such as rough wooden timber flooring and CorTen steel • The Ground Floor of the Riverside Building is made of festiniog slate from North Wale • Manufactured 5000m2 of Optima SC4 anodised aluminium

Furniture and fixture	• No furniture in the gallery space • wooden benches are in the visual and video art gallery • Cafe and restaurant furniture designed by Åke Axelsson • chairs made of steel and aluminium • café stools, counters made of flamed steel • tables with free-from-knots birch tops
Security	• Entrance gates, CCTV cameras, firefighting systems • 4 staircases and 6 elevators in times of crisis • Hello Desk in the main entrance • There is a Hearing Loop system
Environmental factors	• Goal for carbon reduction: 5.2 percent relative reduction (92 kg CO2e per m2) • 5.9 percent relative reduction in energy intensity is the goal (392 kWh per m2) • This is proportional to our floor space and is applied to a baseline of 2018/19. • If the goal is met, BALTIC's carbon footprint in 2021/22 would be 923 tonnes CO2e, 71.5 tonnes CO2e less than in 2018/19.

4.2.3 Musée D'orsay

Old buildings in Paris are generally transformed into museums. From the Louvre, which started as a royal palace, to the grand townhouse that became the Picasso Museum, making a museum is a way Paris has traditionally given new life to great buildings that have survived their original usefulness. Surely the most difficult undertaking since the creation of the Louvre itself is the Musee d'Orsay, the huge recent train station on the left bank of the Seine, that since December, has housed the 19th-century collections of the Louvre. Gare d'Orsay, a swashbuckling Beaux-Arts

structure designed by Victor Laloux in 1898, has a spectacular, barrel-vaulted main space that is one of Paris's great 19th-century rooms.

Figure 4.43: Historical Photo of the Old Gare d'Orsay (also called Gare D'Orléans); Image: laloux

Threatened with demolition by the building of a new hotel complex, the train station was saved a year later by a public that was fueled by outrage over the recent destruction of Les Halles. The station became a landmarked building in 1978. With a modern understanding that respects its nineteenth-century roots, the new Musee d'Orsay opened its doors in 1986. At the time of its end in 1900, the building featured an ornamented Beaux-Arts façade, while its interior boasted metal construction, passenger elevators, and electric rails. Because of changes in railway technology, however, the station soon became outdated and was largely vacant by the 1970s. Talks to transform the building into an art museum began early in the decade and were achieved in 1977 through the leadership of Pres. Valéry Giscard d'Estaing. With government supplies, the building was restored and renovated in the early 1980s by ACT architecture group. The interior was designed by Gaetana Aulenti, who created a complex layout of galleries that involved three main levels investing the atrium under the building's iconic iron-and-glass barrel vault. On the ground floor, formerly the building's train platforms, huge stone structures broke up the large space and created

a central nave for the sculpture collection and gallery spaces for painting and decorative arts.

4.2.3.1 Plan Schema- Functional Schema

The museum building, itself an origin of 19th-century aesthetics and techniques, lends itself to an evocation of the construction work required by life in a modern city, the variety of the materials used, and industry's contribution to the development of new building programs. The architecture was allocated permanent exhibition areas in the museum. It was impossible to illustrate the great changes wrought by Napoleon III and the prefect Haussmann which turned Paris into a modern capital. The emphasis was therefore put on one of the emblematic buildings of the Second Empire which was finished during the Third Republic: the new Paris Opera house, designed by Charles Garnier and built from 1863 to 1875 generation of artists, painters, sculptors, decorators, and ornaments worked on the opera house, which had a permanent impact on European architecture.

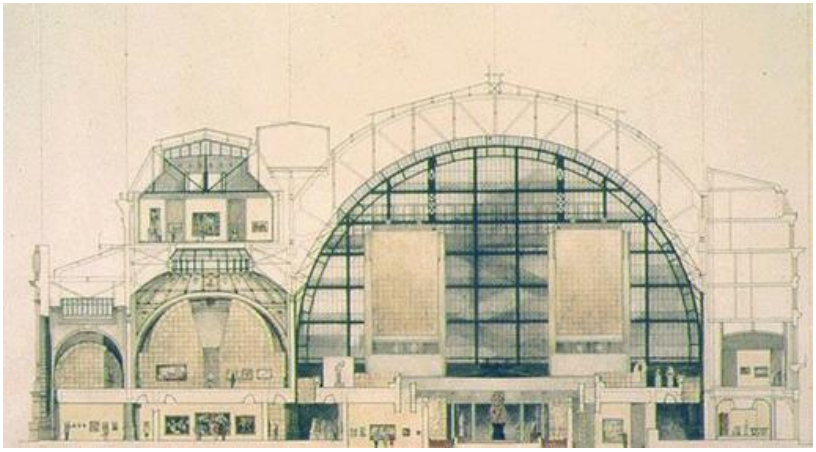

Figure 4.44: Building Cross-Section. Project by Gae Aulenti - Photo musée d'Orsay

Located at the end of the museum's central aisle in a space designed by Richard Peduzzi, the opera gallery shows all features of the monument, town planning, architecture, and decoration, through a polychrome plaster cross-section of the

building as it was at the time of its inauguration on 5 January 1875, as well as a 1/100 scale model of the surrounding district as it was in 1914. Many works in the museum refer to the opera house: Carpeaux's sketches for Dance as well as the original stone group, models of sculptures and decorative details on loan from the opera's architectural agency, a sketch of the ceiling of the auditorium by J.E. Lenepveu, a model of the stage made for the Universal Exhibition in 1900 (on loan from the Opera's museum and library).

Figure 4.45: Interior View of the Nave Undergoing Renovation© RMN-Grand Palais (Musée d'Orsay) / Jim Purcell

The transformation of the station into a museum was performed by ACT architecture group, made up of M. Bardon, M. Colboc, and M. Philippon. Their project was chosen in 1979 out of six projects and would respect Laloux's architecture while nonetheless reinterpreting it according to its new function. The project highlighted the great hall, using it as the central artery of the visit, and changed the magnificent glass cover into the museum's entrance. The museum has been organized on three levels: on the ground floor, galleries are distributed on either side of the central nave, which is overlooked

by the terraces of the median level, these in turn opening up into additional exhibition galleries. The top floor is situated above the lobby, which covers the length of the Quai, and continues into the highest elevations of the former hotel, over the rue de la Légion d'Honneur (formerly rue de Bellechasse). The museum's specific exhibition spaces and different facilities are distributed throughout the three levels: the pavilion Amont, the glass walkway of the former station's western pinion, the museum restaurant (installed in the dining hall of the former hotel), the Café des Hauteurs, the bookshop, and the auditorium.

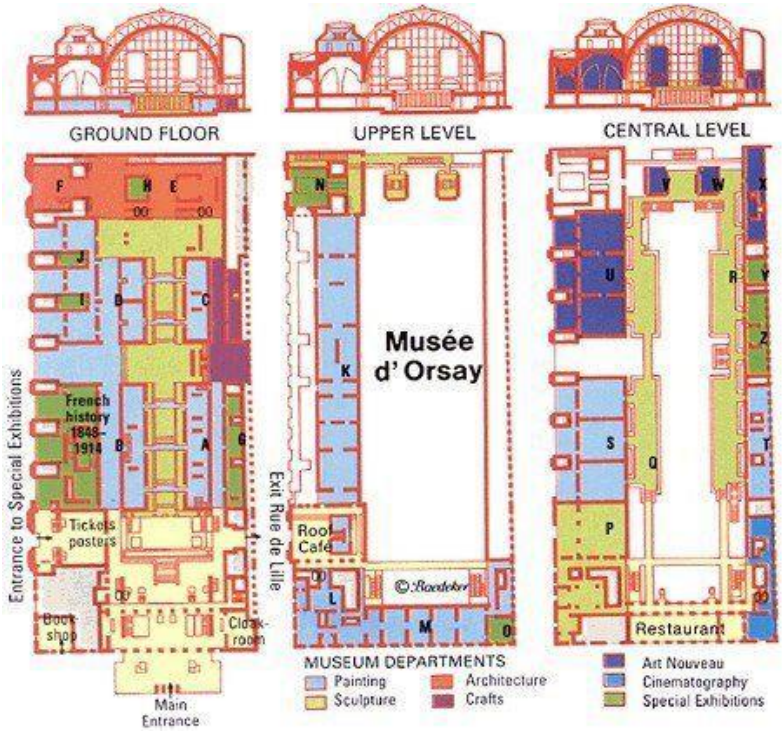

Figure 4.46: Musée d'Orsay Plans by ACT Architects with Gae Aulenti

As previously mentioned, the concept was created by ACT Architects in collaboration with Gae Aulenti, a Milanese architect and designer best known for her interiors, lamps, and furniture. She has been quoted as saying she favored "contrasts rather than compromises" with the old train station, and she has certainly done so. Musée d'Orsay has amassed a vast art collection, far more pieces than can be exhibited in its current

space. So, for the first time in its history, the entire building is being transformed to public space to display more art. A renovation now underway is converting all office space into art space.

The south wing of the building, 13,000 square feet that has been used for administration, will now house expanded Impressionist and Post-Impressionist galleries. Elsewhere, on the fourth floor, a new art education center is being added.

4.2.3.2 Circulation and Accessibility

The building, which once had the majestic simplicity and directness typical of the best Beaux-Arts architecture, is now so confusing in its arrangement that one cannot expect to locate any gallery without a guide. It indicates that the designer was sometimes playing a game. There are galleries like the one at the top of the west end of the block, where post-Impressionists are crowded among a forest of columns, and the tiny gallery in the corner, where Toulouse-Lautrec is shown in a mean, slick room that looks like a Milanese cellar. Some, like the good sequence of galleries beneath the series of domes and vaults along the north side of the original building, are easy to find; the problem here is that many of these spaces have been so filled up with platforms and walls (in this case to show Art Nouveau furniture) that the glorious original architecture is barely visible..

4.2.3.3 Color and Lighting

The dual lighting design preferred in the museum provides the necessary intensity for the presentation of various works of art. During the reconstruction, dark wood flooring was installed, and the walls were painted gray. Previously, the walls were white, forming a halo around the paintings and stopping subtle distinctions and details from emerging. The strength of sunlight was generated using a mixture of halogen and new generation diode lights. The new lighting system, combined with the new color of the

walls, makes for a more effective presentation of works of art. The sculptures are often housed in display cabinets.

4.2.3.4 Finishing Materials

The interior of the museum was designed by Gae Aulenti, with Italo Rota and Castillo designing the lighting, and Richard Pedozi acting as architectural consultant. "This museum has an extensive collection from 1848 to 1914 that displays famous art by painters such as Monet, Degas, Renoir, Ceurat, Gauguin and Van Gogh." Gae Aulenti used a homogeneous stone to wrap floors and walls to create a unified interior look. Artificial and natural light was used. Case by case, the materials used in the design of this building are as follows:

- 12000 tons of metal structure
- 35,000 square meters of glass
- 1600 security staff in the nursery.

Structural art shows efficiency, economy and elegance. If the load path of the structure is seen, the structure is efficient. At the Musee d'Orsay, the cargo route is relatively clear from the inside but is hidden by a rocky view from the outside. Even inside the walls are decorated with decorations that only add to the architecture of the building. These added decorations reduce efficiency and save money. The building used 12,000 tons of metal in its construction, more than was used in the Eiffel Tower. In addition to the main building, which was uneconomical, the reconstruction was 3 years behind schedule and millions of francs more than the budget. Based on the positive public opinion of the building, it can be said that the building is elegant. However, much of this "elegance" is architectural decoration rather than beauty in structure. While the

building is beautiful, it is not considered a structure in terms of art. (ceelondonblogs, 2018).

Laloux design for the building is mainly due to the need to create a railway station that, while combined with its historic environment, serves the future. Thus, the glass and iron arches of the main hall are covered with a stone facade. Stone structures were added to the interior of the building to help create the museum space.

These structures have their own weight. While the construction process is unknown, hypotheses can be made from building images. The stone facade was made using scaffolding before the arches were made. Later, arches, facades and glass were all added. For the renovation, scaffolding was installed throughout the building to access the high roof. Figure 4-49 shows the structure of the arc.

Figure 4.47: Building Works in the Nave of the Musée d'OrsayVers 1984

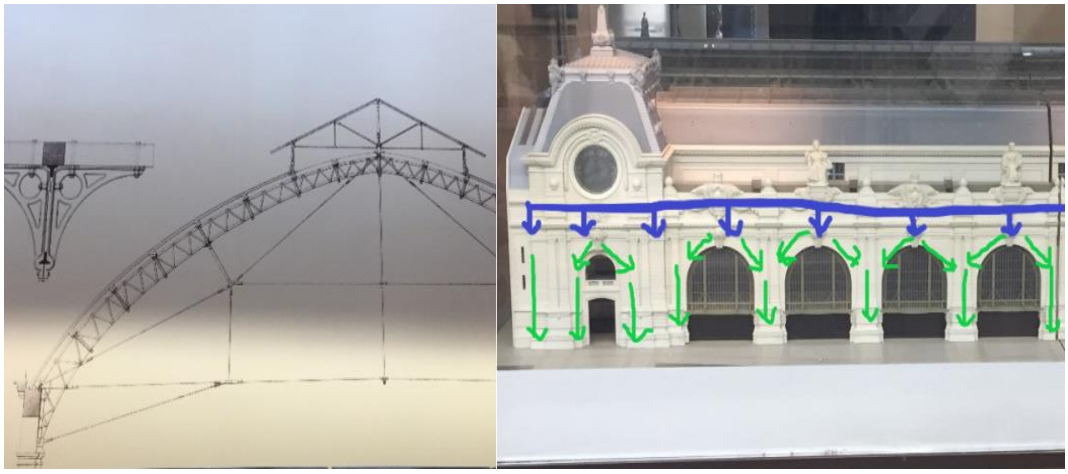

Figure 4.48: Arch construction and Exterior Load Path (https://ceelondonblogs.ce.gatech.edu/blog_3) 2018

ACT Architecture was selected from six proposals submitted by the President of France for the reconstruction of the station. ACT Architect used models such as the one shown in Figure 14 to explain how to renovate existing buildings. Figure (49-4) may be a cross-section used to illustrate how art is painted in a museum.

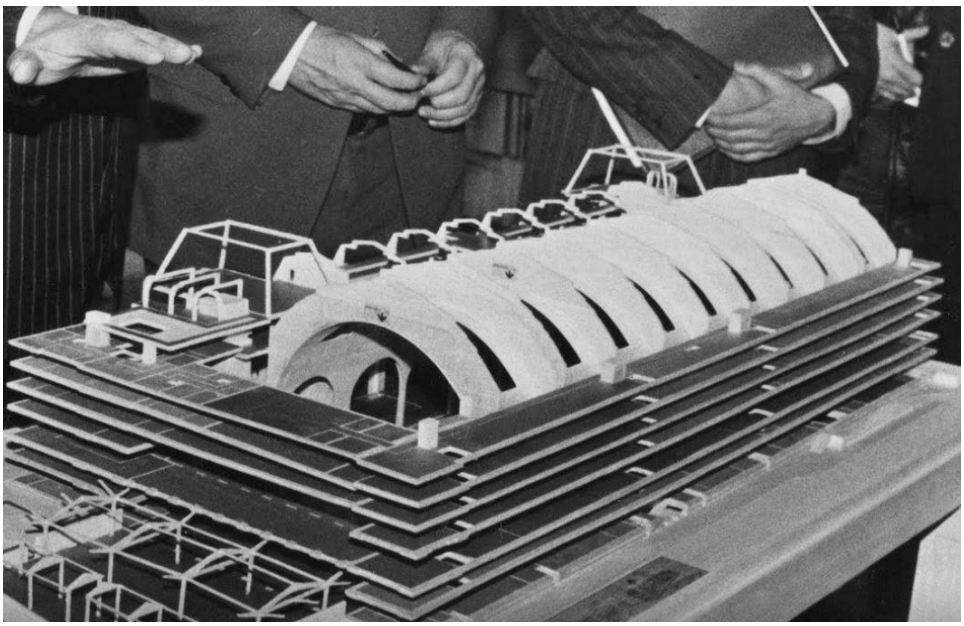

Figure 4.49: Museum Model (https://ceelondonblogs.ce.gatech.edu/blog_3) 2018

Gae Aulenti, the museum's interior designer was also an integral part of the renovation. Figure (4-50) shows a cross-sectional schematic of the museum's interior design. It

was a pioneering project: the first industrial building was renovated to house a large museum. The decor was restored to its former glory and adapted to meet new needs: for example, the ceiling roses in the arched bays were restored to their original state, but the vents and air conditioners were in place to reduce the reverberation of the sound. .

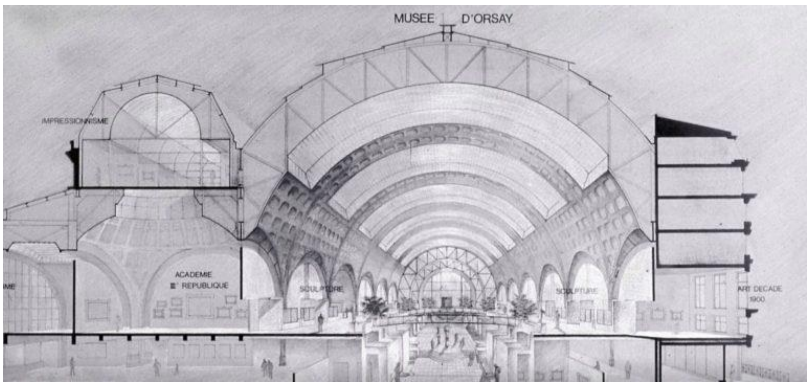

Figure 4.50: Museum Layout Schematic
(https://ceelondonblogs.ce.gatech.edu/blog_3) 2018

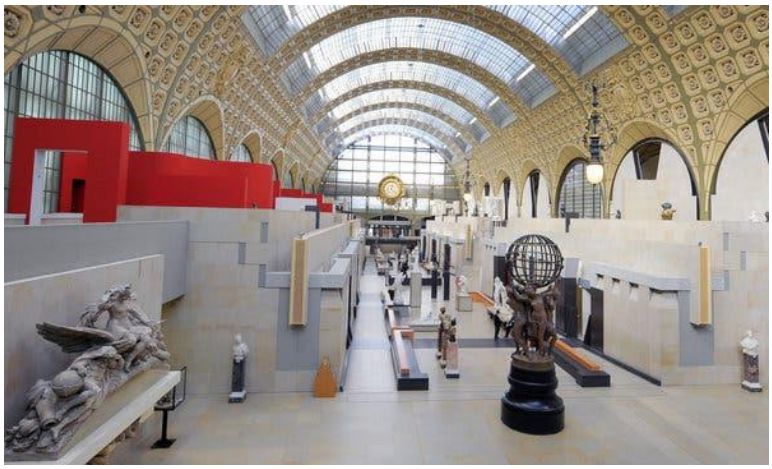
Figure 4.51: Museum Finishing (https://ceelondonblogs.ce.gatech.edu/blog_3) 2018

Between 2009 and 2011, at the initiative of Guy Cogeval, director of the Public Institute since 2008, the Orsay Museum renovated the Impressionist and Post-Impressionist four-story gallery dedicated to decorative art in the "Amont Pavillon" color on the walls. New light was installed. These enhancements show all the subtle

shades of the paintings. At this time, visitor circuits were also examined, and the entire post-Impressionist section, from Van Gogh and Gauguin to the Nabis, was assembled in intermediate-level restored galleries.

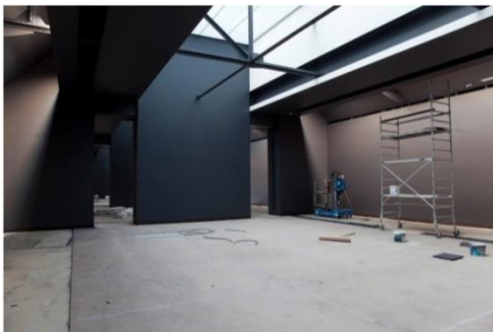

Figure 4.52: Renovating the Impressionist Gallery of the Musée d'Orsay (Musée d'Orsay / Sophie Boegly, 2011)

Figure 4.53: Musée d'Orsay, first room of the Impressionist Gallery (Musée d'Orsay Sophie Boegly,2013)

In 2019, the Musée d'Orsay started a major plan to rehabilitate the central center and its glass tympanum, especially to improve the impermeability, which in turn ensures the durability of the steel structure and arch, and the art collections housed in this museum protects. Musée d'Orsay has accumulated a large art collection, far more pieces than can be displayed in its current space. So, for the first time in its history, the entire building is being transformed to public space to display more art.

4.2.3.5 Furniture and Fixture

The furniture designed for this museum is linear and is located on both sides of the sculptures and also has a space separating mode. In picture 4-54, you can see some of the furniture in the main hall of the museum.

Figure 4.54: Main Hall Furniture

In the museum works section, Art Nouveau is known for its use of organic lines. On levels three and four of the Pavillon Amont you will find stunning Art Nouveau art objects and furniture.

Figure 4.55: Art Nouveau Wonders (1890-1910) PHOTOS BY MARIANO DE ANGELIS ,2018

4.2.3.6 Security

Security in the Baltic center is provided by entrance gates, CCTV cameras, firefighting systems.

4.2.3.7 Environmental Factors

This museum is not considered an environmentally friendly building due to the high volume of heavy materials such as metal, concrete and glass. But on the other hand, in using cooling and heating facilities and using natural sunlight, they have tried to have better energy efficiency.

4.2.3.8 Significant Characteristics/Features

Here we examine the items expressed with specific points in a general table. During which all factors are reviewed.

Table 4.4: Musée d'Orsay- Significant Characteristics/Features

Factors	Significant Characteristics/Features
Conservation and Adaptive Re-use Approach	• This project can be considered as one of the pioneer adaptive re-use projects considering industrial heritage. Important features of the former train station, such as the enormous volume and architectural elements especially arch has been emphasized and can be felt throughout the space, has been conserved.
Plan schema	• 3 floors height • Intermediate level terraces • Amount Booth, West Pinion Glass Trail Former Station, Museum Restaurant • Intricate layout of galleries occupying the three main levels around the lower vestibule • Central nave for a collection of sculptures and gallery spaces • Many of the museum's works refer to the Opera House • Highlight the large hall and use it as the main artery of the visit • A renovation is underway that will transform the entire office space into an art space • On the fourth floor, a new art training center
Circulation and accessibility	• The Impressionists are stuck in a forest of pillars • Some galleries are located under a series of domes and arches along the north side of the main building.
Color and lighting	• The walls used to be white • In this reconstruction, dark wood floors have been added and the walls have been painted gray • Natural and artificial light is used

	• Use a dual lighting scheme that provides the intensity needed for different tasks • A combination of halogen and new generation diode lights has been used
Finishing materials	• A spectacular barrel arch • Using a homogeneous stone coating for floors and walls • 12000 tons of metal structure • 1600 security guards in the nursery • The walls are decorated with decorations
Furniture and fixture	• Impressionist collections • Designed linear furniture • Interior designers, architects, decorators, sculptors and artisans all have a place in the museum.
Security	• Entrance gates, CCTV cameras, firefighting systems
Environmental factors	• This museum is not considered an environmentally friendly building • Energy efficiency in using cooling and heating facilities • Using natural sunlight

4.2.4 Fondazione Prada

Largo Isarco is a rehabilitation and revitalization project of a former factory into a contemporary art center. The OMA office project - designed by Rem Koolhaas, Chris Van Duijn and Federico Pompignolli - gives the Prada Foundation a new space to set up their collections and ambitious exhibition policies with famous curators. From different buildings of the site, two people were dismantled, the height was preserved and restored.

Figure 4.56: Everything Seems Almost the Same Here, But Each Room Behind the Gates is Different. Photo © Adeline Seidel, Stylepark 2018

Figure 4.57: The Milan venue of Fondazione Prada, Conceived by Architecture Firm OMA—led Photo: Bas Princen 2015

If walks into the Fondazione Prada, three prominent elements will stand out:

1. The space called a canopy is an open space covered by an existing arched structure in which many different elements are openly intertwined. This small space is a general concept created by the whole museum and creates it as a set of different situations that face each other.

2. Excessive dimensions of the tower building which is prominent compared to other buildings. In a way, art on earth is different from air, and what is unique about this structure is the variety of effects it has on the content of artists because of the different levels. For this reason, with its completion, each of the 9 tower stories gradually has higher floors. The height of the tower also creates a formal interaction between the museum and Milan. The tower with its generous glass walls, in a constant dialogue with the city, shows the presence of art in its galleries from afar.

3. The ambiguity between what one can really see and the perception of what one sees while standing and looking outside in the Podium Gallery. This is a three-sided glazed gallery located next to the main gate and surrounded by existing buildings and the mirror view of the cinema building.

Figure 4.58: What Looks Like Cobblestones is Actually Wood. Photo © Adeline Seidel, Stylepark

4.2.4.1 Plan Schema- Functional Schema

According to Koolhaas (2015), the main goal of the Fondazione Prada project was to create a spatial diversity for the presentation of art. To achieve this, the OMA first

examined existing buildings and spatial plans to determine exactly what they lacked visibility.

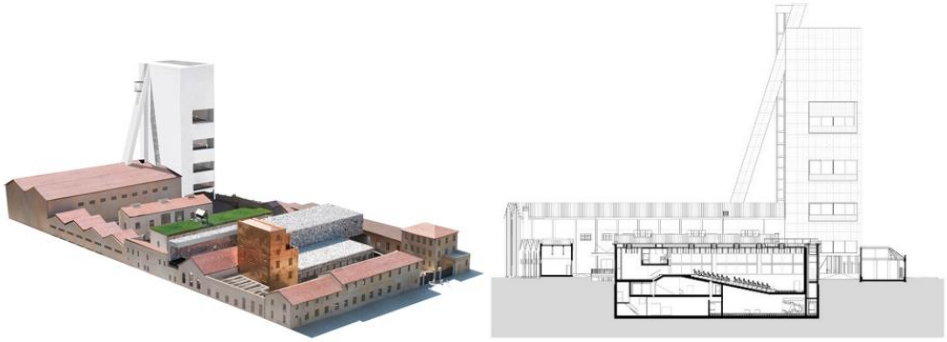

Figure 4.59: Model of the Fondazione Prada. Drawing © OMA 2015

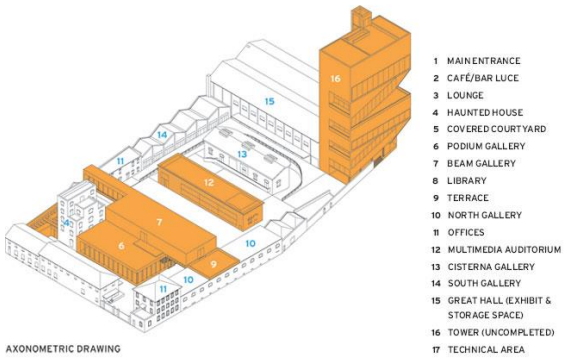

Figure 4.60: Model of the Fondazione Prada. Drawing © OMA 2015

The tower marks the end of Milan. The 60-meter high building is exposed in white concrete. Each of the nine layered floors, thanks to a special combination of three spatial parameters, provides a basic understanding of the interior environment: clear design dimension, height and orientation. Half of the surface is actually developed in a rectangular floor, while the other half represents a trapezoid. The clear height of the ceilings increases from the bottom up and varies from 2.7 m on the first floor to 8 m on the upper level. The exterior is characterized by an alternation of concrete and glass surfaces that allow it to be placed from a north, east or west side on different floors,

while the upper space of the gallery is exposed to zenith light. The south side of the turret offers a diagonal structure in which a panoramic elevator is integrated.

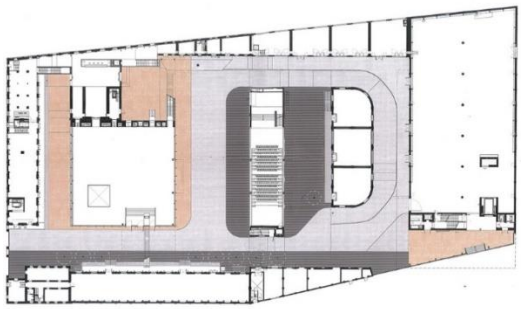

Figure 4.61: Floor Plan of the Fondazione Prada. Drawing © OMA 2015

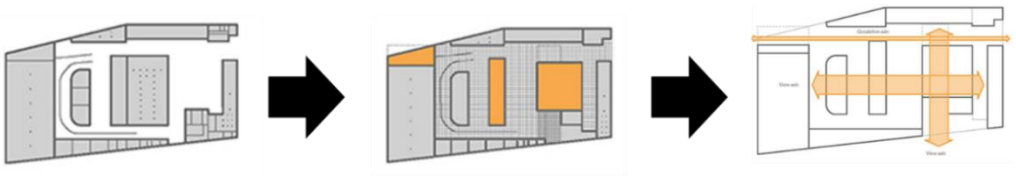

Figure 4.62: Design procces Plan schema Drawing © OMA 2015

Figure 4.63: New and Old Together the Fondazione Prada in Milan. Photo © Bas Princen 2019

The project also included a café added by Wes Anderson director Bar Loess. Ceiling and wall murals are a symbol of Galleria Vittorio Emanuele - a iconic building in Milan - while the color palette, Formica furniture and upholstered wood are a reference

to typical Milanese cafes of the 1950s and 60s. Unlike his films that welcome symmetry, Anderson said there is no ideal angle to evaluate this space. "This is for real life," he said. "I tried to make it the way I want to spend my non-imaginary afternoons."

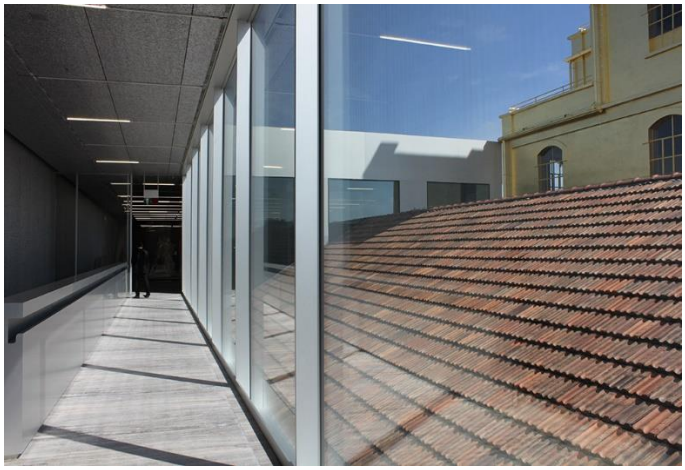

Figure 4.64: The New Architecture Interconnects with the Existing Buildings, Overlaps and Blends with them. Photo © Adeline Seidel, Stylepark 2018

4.2.4.2 Circulation and Accessibility

The one is a massive cube, clad in aluminum foam that features an open-pored coral-like texture that lazily glows silver. The other building perfectly emulates the basic shape of a former hall that was beyond salvaging. It has a reflective façade on all sides and thus has something of a mirage about it. Both the new builds were not simply plumped on the grounds as brash standalones that celebrate only themselves and instead interconnect with the existing buildings, jut out over these, overlap and blend with them.

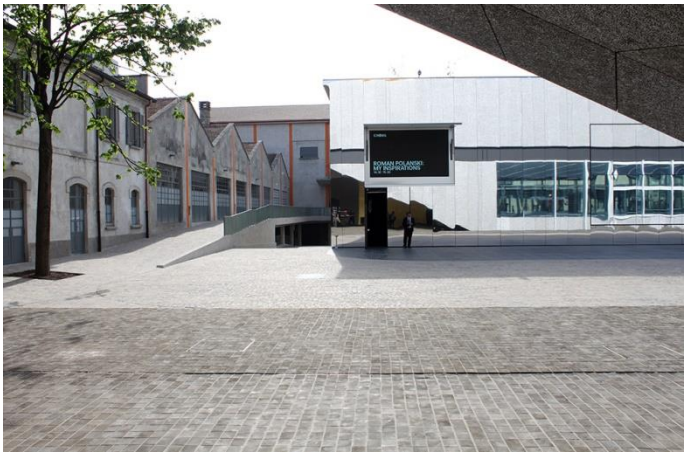

Figure 4.65: The Existing Buildings of the Former Distillery Surround the Area like a Frame. Photo © Adeline Seidel, Stylepark 2018

The complex is sub-divided by the various outdoor areas, which differ in terms of size, topography and material properties. The one forms a street, the other a large square, a third an intimate courtyard shaped by the interaction of buildings and protruding roofs. So perfect are they here, so precisely composed that it is almost as if the architects visited some of the most gorgeous public spaces and plazas in Italy and have taken these as the benchmark to be emulated on the Prada grounds. Thus, between the golden house and one of the existing buildings a sweet little space has been created.

More a large entrance into a courtyard than a real piazza, this is a space where people automatically gather and which exudes a sense of protected openness. By contrast, a Piazza arises between the two new builds and seems to double in size thanks to the reflective façade on the one side.

Figure 4.66: The Largest Space of the Fondazione Prada is between the New, Silver Exhibition Building and the Mirrored Cinema. Photo © Adeline Seidel, Stylepark

It is not just the outdoor areas, but also the interiors that form a unique collection: Each exhibition space, is different. This spatial repertoire offers Fondazione Prada and its wide-ranging art collection a great opportunity to be able to exhibit truly any kind of art. At the same time, this anthology of spaces guides the visitor around the grounds, constantly surprising you with a new and different setting, as if it were a city in its own right.

Figure 4.67: The Area of the Fondazione Prada Must be Explored. Otherwise, You Might Overlook an Entrance to an Exhibition Space. As the Stairs to the Left, One Might Consider - Incorrectly – as a Basement Access. Photo © Adeline Seidel, Stylepark

4.2.4.3 Color and Lighting

This lighting project provides the Fondazione Prada with a flexible and powerful museum and landscaping tool for displaying modern and contemporary pieces of art. Tracks, projectors and general lighting are even more reminiscent of contemporary architecture from OMA in buildings. The site and the whole architecture are also part of this project, for which they have designed and ordered the lighting of the first two exhibitions "Classic Serial" and "Introduction". This art-dedicated combination participates in the museum's architecture and lighting activities with OMA architects, where light design is too much of the main light and creates an environment that can be seen even from outside the building.

Stair lights are lit by lights hidden in the railings and the glow of the walls. Below, the gallery spaces with pale wooden floors and white walls occupy six of the building's nine levels. Some are rectangular, while others are trapezoidal. "Together, these changes create a fundamental diversity in a simple volume - so that the interaction between specific spaces and events or works of art provides endless and varied conditions," Koolhaas said.

Figure 4.68: The Stairwells Lights

The Podium and Beam have the same aluminum roof, which can be adjusted with several settings. It consists of a complex multi-purpose path hidden behind a decorative plate on the hinge.

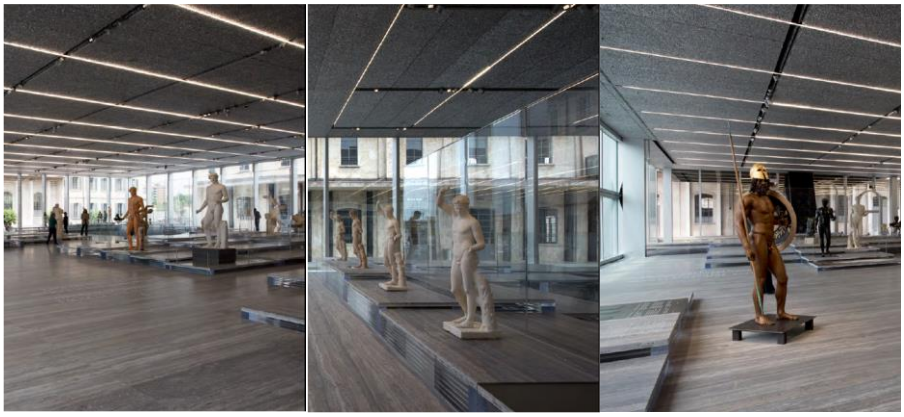

Figure 4.69: Lighting Design Basics on Podium and Beam

No general lighting in the exhibition rooms, but lighting realized by three phases tracks and LED fixtures.

Figure 4.70: Lighting of the Exhibitions

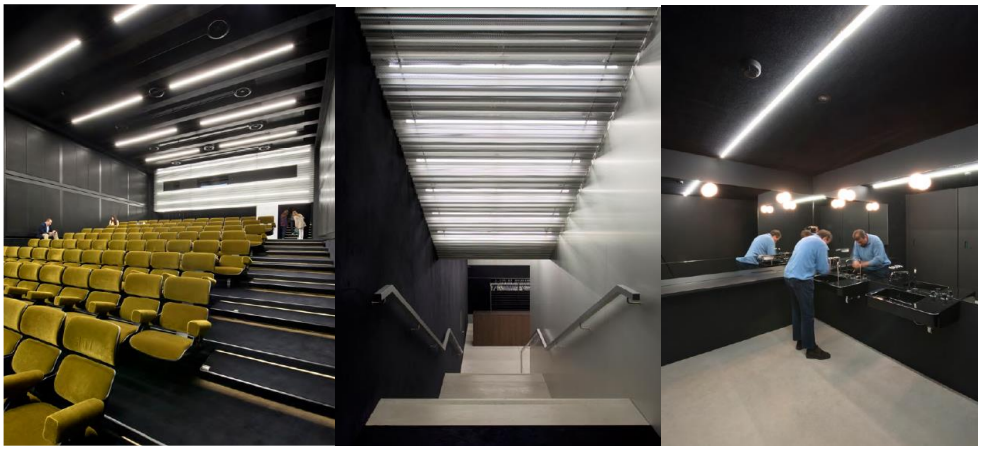

Figure 4.71: Cinema Lighting

The lighting project has designed several environments in hallways and toilets: visible or fully integrated lines, LED lines above towels, and so on. All of these spaces work by detecting presence.

4.2.4.4 Finishing Material

An architectural strategy according to the types of building consists of three types of building: reinforced buildings, new and contemporary buildings, new buildings have been renovated in the old way. To strengthen its identity, OMA designs three contrasting architectural strategies with robust design features.

Figure 4.72: The New Mirrored Building Merges with its Environment. Photo © Adeline Seidel, Stylepark

The flair for collage, contrast, coalitions and overlaps is something to be seen not just in the spaces and volumes, as it is also in evidence in the rich seam of materials used, which range from steel, aluminum, goldleaf, glass, plaster, plastic, wood, to perforated sheet metal, concrete and travertine. And as if that were not more than most architects could cope with, the materials are also used in a variety of versions. Nonchalantly, Koolhaas plays out the different material typologies: Steel is present as a grid, in perforated or in mesh form, not to mention as a dot raster; wood is used as cobbles and as wall panels – and so on and so forth. Some of this has been manifest in other OMA designs. But here Koohlhaas' architectural idiom achieves a new degree of refinement and attests to a new love for detail. The gables of an old building snuggles up to an aluminum facade, whereby the reflective elements of the frontage can unfold such that the building seems to disappear; and the arched windows of an old building are cited in an enlarged and abstract form in the glass of the new build.

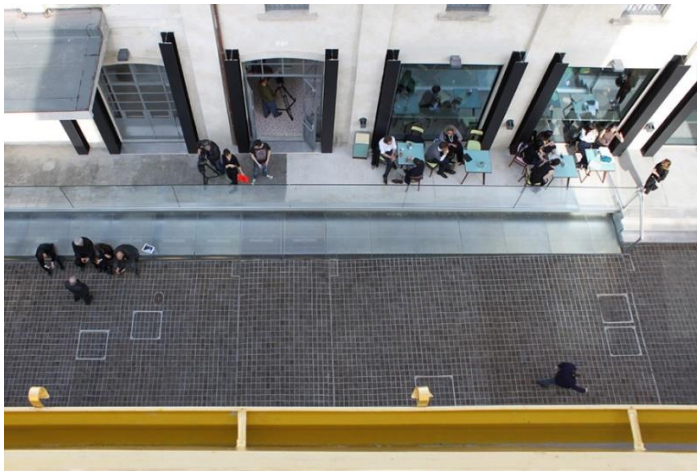

Figure 4.73: Between the Golden House and one of the Bar a Sweet Little Space Has been Created. More a Large Entrance into a Courtyard than a Real Piazza, this is a Space Where People Automatically Gather and Which Exudes a Sense of Protected Openness. Photo © Adeline Seidel, Stylepark

It is constantly surprising how well the in part idiosyncratic and powerful materials and structures go together. The foamed aluminum panels go superbly with the travertine, while the different metal, stone and wooden floorings give each outdoor area a look of its own and subtly divide them into zones. At the same time, the robust and largely industrially materials are exceptionally elegant.

Figure 4.74: The Arched Windows of the Old Building are Quoted in the New Exhibition Space - and also the Bottom View of the Staircase has OMA not Left to Pragmatism. Everywhere on the Site You Will Find This Actually Almost Lovingly Designed Details. Photos © Adeline Seidel, Stylepark 2018

The Renovated buildings are exposed with a strong will so that the effects of intervention and restoration can be seen: reinforcing beams are exposed and painted with contrasting colors, plaster coatings remain raw, improvements and doors.

Figure 4.75: The Building is Covered withAapproximately 4 kg of gold leaf.

The Contemporary buildings such as the tower, with a height of approximately 45 meters of white concrete, Podium and Beam, two aluminum foams with exhibition cover, dominate the area, both in terms of volume and materials, express a completely different architecture: cube Excellent no post on how to use Miss Van Rohe, glazed on three sides for the platform. Long parallel container for beam; Rectangular and triangular rooms with variable height arranged for the tower.

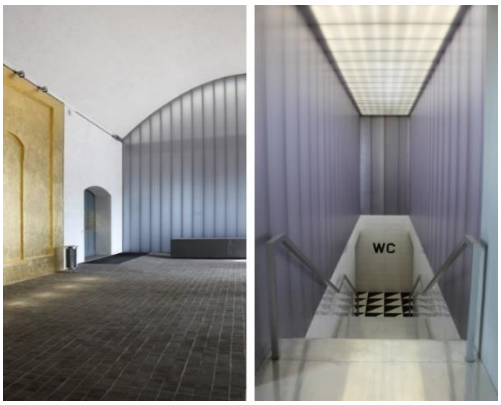

Figure 4.76: The Flair for Collage, Contrast, Coalitions and Overlaps is Something to be Seen not just in the Spaces and Volumes, as it is also in Evidence in the Rich Seam of Materials Used. Photo © Adeline Seidel, Stylepark 2018

Such like a large "free design" building, Podium is one of the foundation's most important sites. Covered with an aluminum floor, it is placed on three sides of glass, with a cool color, the simplicity of its outlines and its contemporary architecture, in front of a house of ghosts covered with gold.

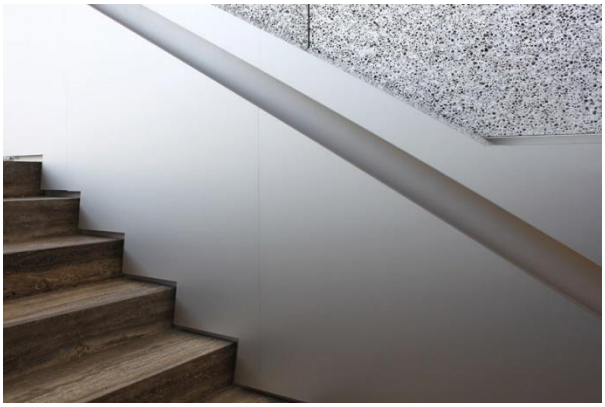

Figure 4.77: Materialkollage par Excellence: The Stairs to the Upper fFoor of the New Building Silver Shine with Absolute Precession. Photo © Adeline Seidel, Stylepark 2018

The sixth-floor Toure restaurant features furniture from the Philip Johnson Four Seasons Auction in New York. The restaurant also opens onto a terrace created by a triangular section of the building's rectangular shape. The most decorative interior of the building is its bathrooms. Close to the top, bright red colors are used inside the toilets. Meanwhile, the mirrored locker room at the base of the tower hides toilets with chartered walls and hides black fixtures.

Figure 4.78: The Torre Restaurant on the Sixth Floor Material and Finishing

Figure 4.79: Paths and Courtyards Flooring

4.2.4.5 Furniture and Fixture

Saarinen Executive Chairs by Knoll offer a seat to customers of the new Restaurant Torre, located on the sixth and seventh floors of Fondazione Prada's latest building. The restaurant, as Koolhaas describes it, is “a collage of pre-existing themes and elements” that brings together works of art and design. The Executive Chairs designed by Eero Saarinen for Knoll in 1950, here with with chrome-plated legs and no armrests, assert their timeless presence and take center stage on the first two of three levels that makes up the space. The third floor incorporates Mies van der Rohe's Brno Chair for a more elevated look and feel.

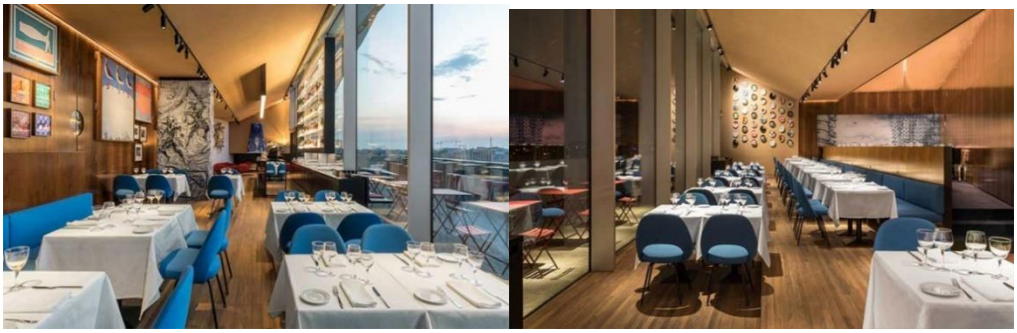

Figure 4.80: Saarinen Executive Chairs by Knoll

The upper level features the original furnishings of the Four Seasons Restaurant in New York designed by Philip Johnson in 1958, in particular, Mies van der Rohe's

custom bar stool that gets its name from the restaurant. In Mies' typical fashion, the Four Seasons Barstool is a meticulous expression of line and form.

Figure 4.81: Mies van der Rohe's Custom Bar Stool

Knoll is synonymous with quality, elegance and modernity. Its history has made it a constantly growing reality that never forgets its roots while never ceasing to look to the future. As a reference point in the world of design, Knoll pays maximum attention to both products and clients.

Figure 4.82: Four Seasons Barstool- Saarinen Executive Chair – Armchair amd Armless with Tubular

4.2.4.6 Security

All places in the complex are monitored by surveillance cameras. It is also equipped with an integrated listening system for information and warning in crisis situations. All buildings are equipped with a fire alarm system and this complex has a close relationship with the local police. There is an entrance gate to enter and exit the art galleries, but in other spaces, such as an urban space, you can walk and visit it freely.

4.2.4.7 Environmental Factors

In the project conceived by OMA, two conditions coexist: preservation and the creation of a new architecture which, although separate, confront each other in a state of permanent interaction. This is an interesting combination of the new and the old.

4.2.4.8 Significant Characteristics/Features

Here we examine the items expressed with specific points in a general table. During which all factors are reviewed.

Table 4.5: Fondazione Prada-Significant Characteristics/Features

Factors	Significant Characteristics/Features
Conservation and Adaptive Re-use Approach	• In this re-use project where it involves rehabilitation and revitalization, especially the heights and the proportions has been conserved. Juxta-positioning has been used in many parts of the project both in terms of forms and materials.
Plan schema	• Combines seven existing buildings with three new structures (Podium, Cinema and Torre) • Preservation and the creation of a new architecture which, although separate • Canopy, which is an outdoor space covered by an existing vaulted structure • The over-scaled dimension of the Tower building • The Tower's height official interaction between the museum and Milan • the cinema building's mirror façade • Prada project was to create a diversity of spaces for presenting art • New buildings added were designed to effortlessly fit the pre-existing structures

Circulation and accessibility	• Sub-divided by the various outdoor areas, topography and material properties. • The one forms a street, the other a large square, a third an intimate courtyard shaped by the interaction of buildings and protruding roofs • The new builds interconnect with the existing buildings, jut out over these, overlap and blend with them. • Sweet little space between the golden house and one of the existing buildings • The interiors that form a unique collection • It were a city in its own
Color and lighting	• Pale wood floors and white walls occupy • the reinforcement beams are exposed and painted with contrasted colors • Close to the top, deep red tones are used inside the lavatories. • The stairwells are illuminated by hidden lights
Finishing materials	• Materials used, which range from steel, aluminum, goldleaf, glass, plaster, plastic, wood, to perforated sheet metal, concrete and travertine. • Steel is present as a grid, in perforated or in mesh form, not to mention as a dot raster • Wood is used as cobbles and as wall panels • The gables of an old building snuggles up to an aluminum façade • The arched windows of an old building are cited in an enlarged and abstract form in the glass of the new build.
Furniture and fixture	• Formica furniture and veneered wooden panelling reference typical Milanese cafes of the 1950s and 60s in Cafe • Washrooms with bright chartreuse walls and black fixtures. • The Executive Chairs designed by Eero Saarinen for Knoll in 1950, here with with chrome-plated legs and no armrests. • The third floor incorporates Mies van der Rohe's Brno Chair for a more elevated look and feel. • the original furnishings of the Four Seasons Restaurant in New York designed by Philip Johnson in 1958 • In particular, Mies van der Rohe's custom bar stool that gets its name from the restaurant. • In Mies' typical fashion, the Four Seasons Barstool is a meticulous expression of line and form.

	• Knoll is synonymous with quality, elegance and modernity.
Security	• Entrance gates, CCTV cameras, firefighting systems • Integrated listening system for information and warning in crisis situations. • Close relationship with the local police
Environmental factors	• Preservation and the creation of a new architecture

4.2.5 The Museum Küppersmühle

In 1860, a grain mill was built by artisan Wilhelm Wieder, one of the founding fathers of the Inner Port of Duisburg. In 1900, the first factory using the most up-to-date technology was put into operation in the Inner Harbor, known as the "Ruhr Bread Basket", and in 1908 the previous buildings were replaced by a three-part structure that now houses the museum. The business was taken over in 1912 by Werner and Nicola, who added a chimney boiler. Adjacent steel silos were built in the 1930s. In 1969 the company merged with the works of Küppers Humberg, which gave its name to the mill and museum. The plant closed in 1972.

Figure 4.83: The Inner harbor of Duisburg was an Important Pport and Trading Center for over 100 years. From the 1990s, the City relied on Large-Scale Redevelopment of the Area. Photo by Jan Dimog

Figure 4.84: Museum Expansion Rendering by Herzog & de Meuron in Duisburg 2016

Based in a former warehouse, MKM opened in April 1999. The building was redesigned by Swiss architect Herzog & de Meuron, using a large plan created by Norman Foster. After the evacuation of the main industrial building, an exhibition space of 3,600 square meters was created on three floors. With 6-meter ceilings, natural light from Turkish gray basalt is provided from the window openings to the ceiling. The building service is provided by an external staircase connected to the main building.


Figure 4.85: Museum Expansion by Herzog & de Meuron in Duisburg photo by Oberhausen 2018

The Museum Küppersmühle (MKM), a project by Herzog and de Moron dating back to 1999, was the first turning point in the transformation of the inner port into an attractive center of urban life.

4.2.5.1 Plan Schema- Functional Schema

The former building and storage factory, which has a historic brick façade, has become a place for art with 3,600 square meters of exhibition space on three floors. This architecture is distinguished by a transparent ratio and a remarkable staircase. According to the original design by British architect Sir Norman Foster, the redevelopment of the derelict inland port into a multi-purpose seaside service park as part of the Emscher Park International Building Exhibition (IBA 1989-1999) will create a modern living space. Commercial and recreational area on the pier. Thus, the previous Coopersmül grain mill became the MKM Küppersmühle Museum of Modern Art. The project was redesigned by the architects of the internationally acclaimed Basel star Herzog and Di Moron.

This architecture, which has a proportionate appearance and its requirements, is characterized by 6-meter high ceilings, gray Turkish basalt floors and a sequence of large rooms. The only connection to the outside world is through the window openings to the high ceiling, which are installed in the mentioned facade of the building. The only new addition so far is the spectacular staircase of Herzog and Di Meoron attached to the front of the building (Figure 4-89). Due to the height of its roof, it forms the visual continuation of the main building. Inside, the constant force of the coil - made of pottery-like concrete and still having the visible footprint of the mold - draws our eyes upwards in an unwritten way. Every year, many visitors are eager to see the impressive features of its architecture. Herzog and De Moron are currently constructing a new building that will provide 2,500 square meters of exhibition space.

Figure 4.86: Museum Expansion Rendering by Herzog & de Meuron in Duisburg 2016

The Küppersmühle Museum has exhibition facilities with more than 2,500 square meters of floor space.

Figure 4.87: Museum Expansion by Herzog & de Meuron in Duisburg Photo by Lucas 2018

It was to be built in 2008 on top of silo towers. The malfunction of the steel company and the subsequent bankruptcy meant that the steel frame structure could not be installed.

Figure 4.88: Previous Design by Herzog & Demorn, not Implemented After Change of Ownership, Rendered by Herzog & Demorn 2013

The development project was reactivated in 2013. A feasibility study by Herzog and de Moron examines the site's potential under current conditions. The resulting project is a completely new beginning. The original idea of a light cube balanced on silo towers and visible from a distance has become controversial. Instead, we propose to build a building whose dimensions and materials correspond to the sequence of historic brick structures along the pier. (Figure 4-90).

Figure 4.89: The Staircase to that Featured in the Museum Project Phoo by Lucas 2018

The two parts include the exhibition grounds, the third part provides access and facilities of the house and the facilities of the work of art. With five levels, one underground, the floor space is about 4,900 square meters, in addition, the exhibition

space is approximately 2500 square meters. Under the influence of the construction ban within forty meters of the highway, scaling was very important. Optimal use of the existing area is used. The arrangement of the exhibition structures - the tallest of the three parts and the smaller part adjacent to it - reflects the trend of the area without buildings, while a height from the third part is along its border. Additives remain perfectly legible. At its highest point (the highest level of the larger exhibit component), the new structure is related in height to the existing main building.

Figure 4.90: Museum Expansion Rendering by Herzog & de Meuron in Duisburg 2016

This format is to be connected directly to the existing exhibition spaces through bridges through high and second level silos and to facilitate the uninterrupted access of visitors to the whole museum. Likewise, the height of the new exhibition areas is indicated by the existing galleries. Silos not only become old and new connecting elements.

Figure 4.91: Museum Expansion rendering by Herzog & de Meuron in Duisburg 2016

Like the existing galleries, the windows facing the pond and the Philosophenweg offer a varied and spectacular view of the site and its surroundings. The material reflects the brick heights of the existing buildings.

A staircase allows for a continuous flow of visitors and the arrangement of all the exhibitions in a sequential order. In terms of concept and space, the staircase is related to the one that was displayed in the museum project in 1999. The new exhibition areas resonate with the Küppersmühle as a typical nineteenth- and twentieth-century industrial facility.

Figure 4.92: The Staircase to that Featured in the Museum Project hoo by Lucas 2018

Galleries in their architecture and interior design are a reflection of the existing exhibition spaces. Silos, as originally built in the 1930s, must have a superstructure. With an observation deck accessible from the pier promenade, the superstructure adds another function to the silos. (Herzog & de Meuron, 2015).

Figure 4.93: Interior Gallery Photo on Pinterest 2018

4.2.5.2 Circulation and Accessibility

As with the original conversion of the historic grain mill, the design for the extension by Herzog & de Meuron is oriented on the existing architectural fabric of the MKM and the Inner Harbour. Three structures of varying height extend the existing museum and combine to form a new main building which harmoniously and systematically closes the row of buildings flanking the harbour basin.

The new structural element will be linked to the existing museum complex via the silos, which run in an easterly direction along the inner-harbour basin towards the A59 Autobahn. Bridges on the first and second floors of the silos will form a connection between the new and existing exhibition rooms. Both in terms of outer appearance and materiality, the silos themselves are to be preserved as an industrial monument. Serving as an access element and connecting exhibition space, they will, however, be

endowed with a new purpose. Furthermore, the silos will be equipped with a viewing terrace to grant visitors access for the first time.

4.2.5.3 Color and Lighting

The interior lighting is in the form of linear fluorescent lighting with moonlight, and in the stairwell, tall windows are used to use natural light, as well as the color of the walls of all galleries is white. Daylights comes from full height slits and this provide enclosed, concentrated spaces (Figure 4.96).

Figure 4.94: Lighting corridors and stairs photo Frank Dorgathen 2018 & Interior gallery lighting photo on pinterest 2018

Figure 4.95: Interior gallery lighting photo on pinterest 2018

Figure 4.96: DayLight Design photo on pinterest 2018

Figure 4.97: DayLight Design Photo on Pinterest 2018

4.2.5.4 Finishing Material

The MKM Museum rebuilt by architects Herzog & de Meuron from 1997–1999, and, with its historical brick façade and the white-cube interior design, it is a prime example

of the successful conversion of an old industrial building in the Duisburg inner harbour area into a building that satisfied the contemporary requirements for museum operation. The completely gutted storage building became an exhibition area of over 3,600 square metres on three storeys. The staircase tower is the only new addition and, with its spiraling terra cotta-coloured concrete, its raw, warm texture, and the impressive acoustics, it feels like a large, walk-in sculpture. The exhibition spaces there are reduced to six-metre high white walls and a floor made of grey basalt; they hold back in favour of the art.

Figure 4.98: Brick Has been Used as the Final Material in the Exterior Design of the Museum Photo Frank Dorgathen 2018

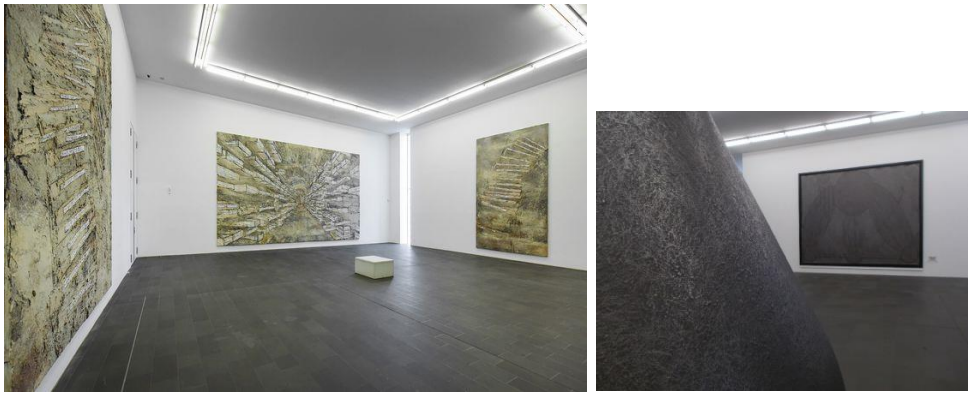

Figure 4.99: The Exhibition Spaces There are Reduced to Six-Metre High White Walls and a Floor Made of Grey Basalt Photo Frank Dorgathen 2018

4.2.5.5 Furniture and Fixture

The furniture in the middle of the galleries is designed in a completely minimal way in the shape of a cube with white wood. In the other gallery, in a completely minimal way, it is in the shape of a stool and is made of wood with dark colors.

Figure 4.100: The Furniture in the Middle of the Galleries is Designed in a Completely Minimal , Photo Frank Dorgathen 2018

A total of 40 different pieces have been designed, including 9 variations of fundamental changes to accommodate different tasks. He envisions the development of new forms of tables and chairs as modular units that express the following principles of work.

Figure 4.101: A Total of 40 Different Pieces have been Designed Photo Frank Dorgathen 2011

4.2.5.6 Significant Characteristics/Features

Here we examine the items expressed with specific points in a general table. During which all factors are reviewed.

Table 4.6: The Küppersmühle Museum- Significant Characteristics/Features

Factors	Significant Characteristics/Features
Conservation and Adaptive Re-use Approach	• In this project, the most important elements such as tall windows, and materials, namely brick, belonging to the original use has been conserved.
Plan schema	• 3,600 m² of exhibition space extending across three storeys. • Architecture is distinguished by its lucid proportions and striking staircase. • Based on the masterplan devised by the architect Sir Norman Foster • The only addition so far is the spectacular staircase attached to the front of the building. • Currently realizing the new extension building which will provide additional 2,500 m² of exhibition space • The silos will also house distinctive exhibition spaces.
Circulation and accessibility	• The new structural element will be linked to the existing museum complex via the silos. • Furthermore, the silos will be equipped with a viewing terrace to grant visitors access for the first time. • museum and combine to form a new main building
Color and lighting	• The interior lighting is in the form of linear fluorescent lighting with moonlight • in the stairwell, tall windows are used to use natural light, • the color of the walls of all galleries is white. • Daylight comes from full height slits and this provide enclosed, concentrated spaces.
Finishing materials	• Boasting an historic brick façade • the white-cube interior design • The staircase tower is the only new addition and, with its spiraling terra cotta-coloured concrete, its raw, warm texture, and the impressive acoustics, it feels like a large, walk-in sculpture • The exhibition spaces there are reduced to six-metre high white walls and a floor made of grey basalt
Furniture and fixture	• The furniture of the galleries completely minimal way with shape of a cube and white wood.

	• In the other gallery, The furnitures are in the shape of a stool and is made of wood with dark colors. • A total of 40 different pieces have been designed • Including 9 variations of fundamental changes to accommodate different tasks. • Envisions the development of new forms of tables and chairs

4.2.6 The Lanitis Carob Mill Complex

Lanitis Carob Mill Complex is in Limassol, Cyprus. The Evagoras Lanitis Centre comprises one third of the Carob Mill, which is one of the largest listed industrial buildings in Cyprus.

Carob is a highly valued tree in Cyprus. Locals call it «black gold». The Carob Mill Museum displays the technology and tools used to process its pods and explores the role of this tree in the island's economy. Carob has been cultivated for many centuries in the Mediterranean and its seeds were once used to measure weight (we have all heard of the word «carat», which comes from the Greek word «keration», whose weight is constant and measures 0.2 grams). The resulting powder — carob — is used as a coffee substitute. It can also be transformed into syrup (also used as medicine), or used in baking and as an ingredient in soujoukos — traditional Cypriot sweets.

The lower and upper levels of the former factory (which you can explore by taking the staircase) contain old British equipment by John Wilder Ridding, such as conveyor belts used to clean and process the plant, weight scales and others. Original drawings and descriptions on the walls talk about the way things worked before mechanization.

Figure 4.102: Parking & Main Entrance of the Lanitis Carob Mill Museum (Türker, 2010)

This area of the building was originally used for the storage of Carob products that used to be processed through the carob crushers.

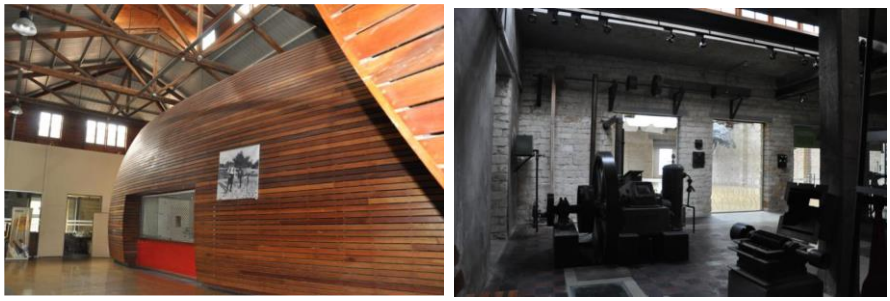

Figure 4.103: Interior of the Lanitis Complex, Theater Entrance & Machinery System of the Former Carob Mill (Türker archive, 2010)

4.2.6.1 Plan Schema- Functional Schema

According to the list of Lanitis Carob Mill Complex (2021) Located in one of the most historic areas of Limassol, between Limassol Marina and the medieval castle, the Carob Mill complex was built in the late 1800s and used as a warehouse and later became a carob factory in the late 1920s to 1960s. The renovated building was renovated in 2000 and created an environment that combines the original atmosphere of the past with the sophisticated and advanced look of today. The building consists of three ideal venues for hosting conferences and social events, international exhibitions

and awards ceremonies, the Carob Mill Museum, the Carob Mill restaurants and a car park. This collection includes the following spaces.

Figure 4.104: The Lanitis Carob Mill Complex, catalogue (2021)

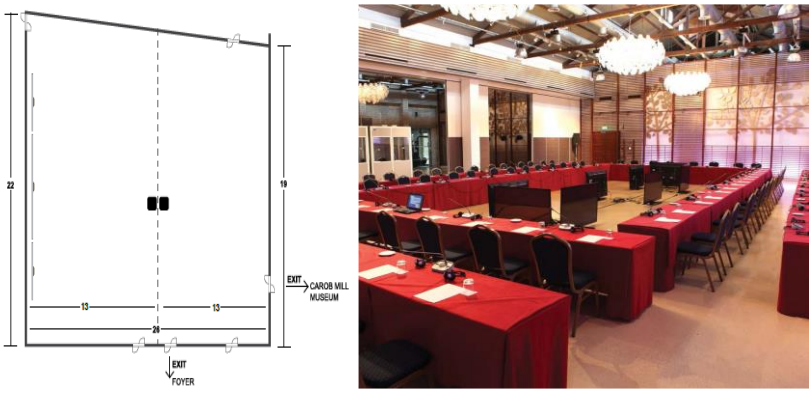

Figure 4.105: 'Richard and Berengaria Ballrooms' Drawing and photo (the Lanitis Carob Mill Complex catalogue (2021)

The Ceronia Hall constitutes one third of the carob mill complex and is located next to the carob mill museum

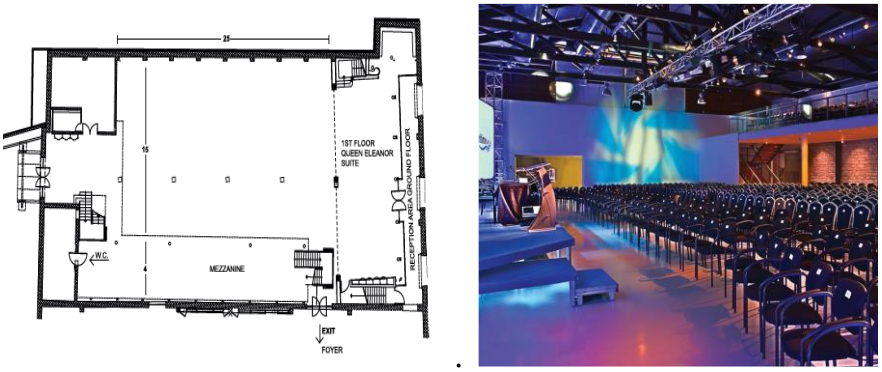

Figure 4.106: The Ceronia Hall on the Carob Mill Complex ,the Lanitis Carob Mill Complex Catalogue 2021

Figure 4.107: The Ceronia Hall on the Carob Mill Complex, the Lanitis Carob Mill Complex catalogue 2021

- Carob Mill Restaurants Ltd: Established in 2002 and member of the Lanitis Group of Companies, Carob Mill Restaurants Ltd aim to provide quality products and services by using only the finest ingredients from selected suppliers from Cyprus and abroad and adheres to the highest standards of hygiene, health and safety. Throughout the years, the awards winning restaurants and dedication to excellence have earned a loyal and strong client base. Currently Carob Mill Restaurants operates six restaurants, a lounge café-

bar and a pizzeria & trattoria; offering a variety of cuisines such as Cypriot, Mediterranean and International. Restaurants in the complex include.

Figure 4.108: Bar Entrance (2010)

1. Artima Bistro: Located at the Lanitis Carob Mill Complex next to the Medieval Castle, the award winning restaurant offers Mediterranean dishes inspired by the Italian cuisine.

Figure 4.109: Artima Bistro Located at the Lanitis Carob Mill Complex ,the Lanitis Carob Mill Complex Catalogue 2021

2. Stretto Café Lounge-Bar : Located at the Lanitis Carob Mill Complex next to the Medieval Castle, our café and lounge bar offers light dishes of the Mediterranean cuisine and sweets at a trendy and vibrant environment.

Figure 4.110: Stretto Café Lounge-Bar Located at the Lanitis Carob Mill Complex ,the Lanitis Carob Mill Complex catalogue 2021

3. Meating Grill & Co : Located at the Lanitis Carob Mill Complex next to the Medieval Castle.

Figure 4.111: Meating Grill & Co Located at the Lanitis Carob Mill Complex ,the Lanitis Carob Mill Complex catalogue 2021

4. Vecchia Napoli: Located at the Lanitis Carob Mill Complex next to the Medieval Castle, attention to details such as the wood-burning oven serves authentic pizza, pasta, grills and house specialties offering a unique dining experience.

Figure 4.112: Vecchia Napoli Located at the Lanitis Carob Mill Complex ,the Lanitis Carob Mill Complex Catalogue 2021

5. Karatello Tavern: Located at the Lanitis Carob Mill Complex next to the Medieval Castle, Karatello serves traditional, innovative meze dishes capturing the ambience of an oldfashioned and welcoming tavern.


Figure 4.113: Karatello Tavern Located at the Lanitis Carob Mill Complex ,the Lanitis Carob Mill Complex catalogue 2021

6. Draught Microbrewery: Located at the Lanitis Carob Mill Complex next to the Medieval Castle, Draught Microbrewery offers international dishes influenced from Mexico, Germany, U.S.A. and Greece.

Figure 4.114: Draught Microbrewery Located at the Lanitis Carob Mill Complex ,the Lanitis Carob Mill Complex Catalogue 2021

7. Yabashi: Located at the Lanitis Carob Mill Complex next to the Medieval Castle, Yabashi Asian Fusion invite you to try from our menu the very best of Asian Gastronomy & Sushi Creations.

Figure 4.115: Yabashi Located at the Lanitis Carob Mill Complex ,the Lanitis Carob Mill Complex Catalogue 2021

4.2.6.2 Circulation and Accessibility

It has a linear circulation and rotation on one floor and access is through the courtyard to the inner maqtans, as well as some spaces have access to each other from inside.

4.2.6.3 Color and Lighting

Lighting is a very important place for the center of the Lanitis complex. Light is the main tool, which helps us to see and experience the depth of the center. In the Lanitis

complex, natural light is provided through the ceiling, the lowest level of the museum. Cleverly organized lighting helps the center look bigger, wider, and less cramped (Lanitis Complex, 2017).

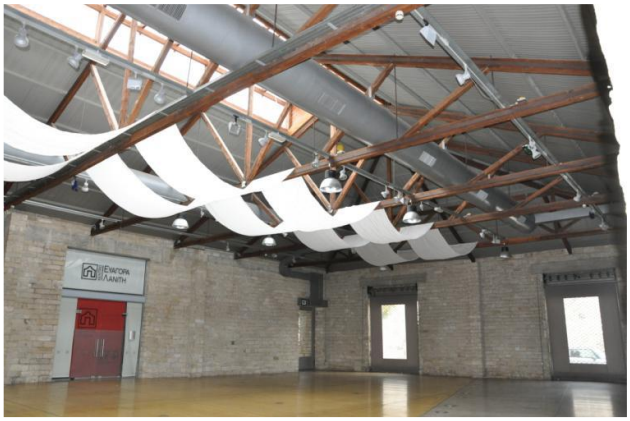

Figure 4.116: Natural Lighting from the Ceiling (Türker archive, 2010)

4.2.6.4 Finishing Material

The building of the former carob mill warehouses hosts hundreds of events in Limassol, ranging from entertainment and culture to exhibitions and conferences, due to its central location and impressive picture, which features high ceilings and traditional stone walls.

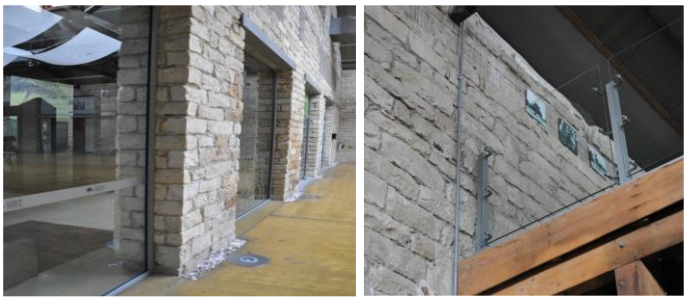

Figure 4.117: Finishing of the Building, Mezanine of the Museum (Türker archive, 2010)

Figure 4.118: Interiors (Türker archive, 2010)

4.2.6.5 Furniture and Fixture

As mentioned in the lighting section, special furniture is not considered for this collection and all tables and furniture are selected based on the installed location, but the common point between all of them is that most of the furniture has short and minimal bases. . But the material of their construction is selected from wood, metal, plastic and fabric (can be seen in Figures 4-90 to 4-104).

4.2.6.6 Security

Security gates have been placed at the entrance of the complex and surveillance cameras and a fire alarm system have been used inside the building. Minimum Intervention has been achieved in the additional Systems (Figure 4- 108).

Figure 4.119: Fire Security System & Main Entrance of the Lanitis Carob Mill Museum (Türker Archive, 2010)

4.2.6.7 Significant Characteristics/Features

Here we examine the items expressed with specific points in a general table. During which all factors are reviewed.

Table 4.7: The Lanitis Carob Mill Complex Significant Characteristics/Features

Factors	Significant Characteristics/Features
Conservation and Adaptive Re-use Approach	• In this project, we can identify widely accepted principles of architectural conservation (Chapter 2); all new additions should be clearly distinguished from the original structure, and all new additions should be reversible, where if they removed, no harm will occur to the original fabric. After all the new additions, the project is still part of the historic urban quarter, with all its authentic features.
Plan schema	• There are three venues in the building that are suitable for holding conferences and social activities. • Additionally the venue had a smaller space on the first floor designed for multipurpose function.
Circulation and accessibility	• It has a linear circulation • rotation on one floor • access is through the courtyard to the inner maqtans • as well as some spaces have access to each other from inside.
Color and lighting	• In the Lanitis Complex, the natural lighting is supplied through the ceiling
Finishing materials	• The combination of wood and stone propounds a mysterious atmosphere • featuring high ceilings • traditional stone walls • Transparent Balustrade
Furniture and fixture	• Special furniture is not considered for this collection • All tables and furniture are selected based on the installed location • the common point between all of them is that most of the furniture has short and minimal bases. • Selected from wood, metal, plastic and fabric
Security	• Security gates • Surveillance cameras • fire alarm syste

4.2.7 Nicosia Municipal Arts Centre

Cyprus, as a former colony with a troubled history, falls into the group of "emerging national governments" (Aronson 2011: 47). Museums are used to build, strengthen and design specific national narratives. These museums, exclusively by the various ministries and the vertical decision-making bureaucratic system that is required, envisage a cultural policy that is inevitably influenced by political situations. Far from representing global values, museums in both parts of the divided country focus on their identity and territorial claims. Building direct and strong narratives in the midst of political and cultural conflicts often means silencing the voices of minorities or opposing the prevailing narratives (Bounia & Stylianou-Lambert, 2011).

The Nicosia Municipal Arts Center, affiliated with the Pyridz Foundation, is housed in the renovated Old Powerhouse in historic Nicosia. NiMAC opened on January 14, 1994 and is the oldest and largest center of contemporary art on the island. Restoration and transformation of its architecture into a beautiful cultural and artistic space in 1994 received the European Nostra Award.

Figure 4.120: Image of the Old Power plant and the Current art Gallery Source: Nicosia Municipality 2021 Website

4.2.7.1 Plan Schema- Functional Schema

The Arts Centre is located in the old Power Station building, which was given to the Municipality of Nicosia by the Electricity Authority. This structure housed Nicosia's first power generation station. (Figure 4- 120) It had been deserted for almost 20 years until the Nicosia Municipality, during the majoralty of Lellos Demetriades, made an agreement with the Pierides Foundation, during the Demetris Z. Pierides presidency, for the transformation of the complex into the Nicosia Municipal Arts Centre.

Figure 4.121: Interior of Nicosia Municipal Arts Center Exhibitions Source: Nicosia Municipality 2021 Website

Figure 4.122 : Library of the Nicosia Municipal Arts Center Source: Nicosia Municipality 2021 website

The newly refurbished restaurant “Old Powerhouse” operates in the courtyard of the Arts Centre and offers quality Cypriot and international cuisine.(Figure 4- 110)

Figure 4.123: The Nicosia Municipal Arts Centre Restaurant. Source: Nicosia Municipality 2021 Website

4.2.7.2 Circulation and Accessibility

As you walk into the center, you will notice large information stands dedicated to the new exhibition the main exhibition space is divided into three wide, interconnected halls. Viewers are encouraged to connect with art and its message on a multi-dimensional level at contemporary art events because they have more than just a visual experience. This is also true for art curators, who are tasked with creating an art space that encourages this process. As you walk down the arts center's hallway, you have the choice of entering the tiny, briefly exhibition rooms on the right, which display a variety of audio-visual content.

4.2.7.3 Color and Lighting

In the Art Center of Nicosia Municipality, the floor is made of large ceramic pieces of gray concrete design and the walls have been preserved in the same condition as in the power plant. Privacy is common.(Figure 4- 110). In the library, the white walls and floor are the same color, and in another part, the brown wooden floor is used. In the restaurant, the floor is the same color and the walls are different colors, and in general, we can say that the design unity in This museum is not visible.(Figure 4-111, 124).

The lighting is linear and point and in the parts of the exhibition, rail light with a halogen projector can be seen, which can be used more in ordinary art galleries. In general, there isn't a special lighting design for this face-to-face building.

Figure 4.125: Rail Light with a Halogen Projector Can be Seen

4.2.7.4 Finishing Materials

The center is located in a building that used to once house a powerhouse (early 20th century). The building has since been restored, but has retained its original walls, the layout and the metal elements, which create a particularly suitable backdrop for the artworks on display. Following the restoration work in 1994, the building, which is an excellent example of industrial architecture.

Figure 4.126: Light with a Halogen

4.2.7.5 Furniture and Fixture

As it has been seen in the lighting section, the furniture of this museum, like the Lanitis mill complex, does not have a specific and coordinated design and is selected solely based on the use of the place and not on the historical industrial design of the center.

A short base has been used, but in the other part, it has used comfortable chairs with leather upholstery. .(Figure 4-111, 126). In the bar section there is an ordinary chair that we can see every other time we walk in Cyprus, and in the yard there is a blue metal chair that has nothing to do with the historical content and contemporary art of Cyprus in Nicosia.

4.2.7.6 Security

The center is equipped with an entrance gate and security at the entrance and inside the galleries and other places is equipped with a fire extinguishing system and fire alarm.

4.2.7.7 Significant Characteristics/Features

Here we examine the items expressed with specific points in a general table. During which all factors are reviewed.

Table 4.8: Nicosia Municipal Arts Centre (NIMAC) Significant Characteristics/Features

Factors	Significant Characteristics/Features
Conservation and Adaptive Re-use Approach	• In this project, we can identify widely accepted principles of architectural conservation (Chapter 2); all new additions should be clearly distinguished from the original structure, and all new additions should be reversible, where if they removed, no harm will occur to the original fabric.
Plan schema	• The building, a typical example of industrial architecture in Cyprus • Restored in its original form • Collaboration with the Cyprus Chamber of Fine Arts, the Shop with art objects and publications and the "Old Power House" restaurant. • Housed in the past the library of the History of Art • Alongside its exhibitions, NiMAC also conducts research and educational work.
Circulation and accessibility	• The main exhibition space spans across interconnected halls

	• Screen various audio-visual material. • there is a shop for art books
Color and lighting	• Generally, we can say that the design unity in This museum is not visible. • In the library, the white walls and floor are the same color • In another part, the brown wooden floor is used • In the restaurant, the floor is the grey color and the walls are different colors • Rail light with a halogen projector can be seen • In general, there isn't a special lighting design
Finishing materials	• The floor is made of large ceramic pieces of gray concrete design • In another part, the brown wooden floor is used • Walls have been preserved in the same condition as in the power plant
Furniture and fixture	• A short base has been used, but in the other part, it has used comfortable chairs with leather upholstery • Ordinary chairs are in bar section • At yard there is a blue metal chair that has nothing to do with the historical content and contemporary art
Security	• The center is equipped with an entrance gate and security at the entrance • Equipped with a fire extinguishing system and fire alarm.

4.2.8 Istanbul Museum of Modern Arts

This museum in Istanbul is dedicated to contemporary art in Turkey. It was launched in 2004 by the affluent Eczabaşı family on the shore of the Bosporus. The occupied area is almost 8000 square meters (Polo, 2013). Tabanlioglu, who is a very famous architect in Turkey, has redesigned and adapted it(Figure 4.1 & 4.2).

Figure 4.127: In Front of the Istanbul Modern Museum (muratgermen.com)


Figure 4.128: Behind the Museum, Istanbul, Turkey (muratgermen.com)

4.2.8.1 Plan Schema- Functional Schema

Since Istanbul modern is a site that has been redesigned from a warehouse to a museum, it has a simple simplicity. The key architectural requirements for the construction were the minimal use of intervention to highlight and differentiate the works of art. In compliance with this criteria, light grey became the building's base color.

This museum has two floors. First floor is for the permanent collection of the Turkish modern and contemporary arts (İstanbul Modern, n.d). This floor also provides conference spaces, a restaurant and a museum store. The temporary exhibition room, cinema, offices and library are located on the lower level. Some of the exhibits that take place temporarily in the lower floor include contemporary art such as architecture, design, film, digital media and photography. (Tabanlıoğlu Architects, 2010).

4.2.8.2 Circulation and Accessibility

There is a low ramp at the main entrance to the building that leads to the first floor (Figure 4.3). Right after entering the first floor, the information desk, locker room and museum store are situated. It keeps permanent collections in a chronological organization that are displayed. While there is a chronological relationship between the works of art through the museum, the circulation pathways are built differently. the visitor can choose how to navigate in a museum (Figure 4.4).

Figure 4.129: Istanbul Modern Museum (muratgermen.com)

The first floor is where the restaurant is situated. It is built with updated ottoman motifs and a terrace with a sea view (Figure 4.5). Visitors can walk by the hanging staircases on the way to the lower floor.

Figure 4.130: Interiors (muratgermen.com)

4.2.8.3 Color and Lighting

The natural light for the construction is absorbed by wide openings. Not all the interior parts of the museum, however, receive sunshine. Furthermore, the gray color of the walls and floors reflects on the installed artworks (Figure 4.7).

Figure 4.131: Istanbul Modern Museum (muratgermen.com)

4.2.8.4 Finishing Materials

The base material is concrete and steel columns however later on more contemporary materials added to the existing structure like steel and glass. (Figure 4.8) (Tabanlıoğlu Architects, 2010).

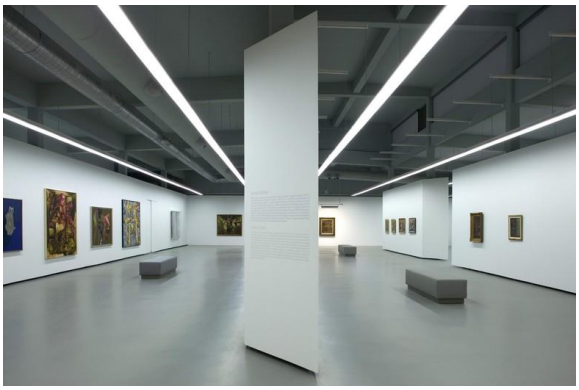

Figure 4.132: Istanbul Modern Interior / Morat Germen (tabanlioglu.com)

4.2.8.5 Furniture and Fixture

Istanbul Modern seeks to serve as a neutral space that does not affect the identity and concept of works of art. The permanent collection includes the upper level. This

collection consists mainly of paintings on the walls that are installed. In the lower level, temporary exhibits are held and due to the displayed artworks, the show units change. In the museum galleries by the walls or in front of artworks for visitors, there are several rectangular benches.

Figure 4.133: Istanbul Modern's Upper Floor & Lower Floor that Hosts Temporary Exhibitions (tabanlioglu.com)

4.2.8.6 Security

It can be said, in terms of safety, that it has a high range of protection. The first experience for the visitor is the entry control room, right before entering the museum site.

4.2.8.7 Environmental Factors

The Istanbul Modern has wide glass openings that provide the interior space with daylight. In order to decrease the bad effects of sun radiation, shelters and walls are reserved. The ventilation system is supported on the top by exposed steel channels that allow the spaces to be suitable for both individuals and objects. it is forbidden to take flash photographs within the museum. Also, no food or drinks are allowed around the collections.

4.2.8.8 Significant Characteristics/Features

Here we examine the items expressed with specific points in a general table. During which all factors are reviewed.

Table 4.9: Istanbul Modern Significant Characteristics/Features

Factors	Significant Characteristics/Features
Conservation and Adaptive Re-use Approach	• In this project, as a conservation approach, the interventions are to keep main features of the warehouse while transforming it into a museum function. Minimal contemporary interventions were implemented in accordance with principles advised in the international documents of conservation.
Plan schema	• Museum has two floors • First floor is for the permanent collection of the Turkish modern and contemporary arts • The temporary exhibition room, cinema, offices and library are located on the lower level • Modern Istanbul seeks to serve as a neutral space that does not affect the identity and concept of works of art.
Circulation and accessibility	• There is a low ramp at the main entrance to the building that leads to the first floor • Right after entering, are situated the information desk, locker room and museum store • While there is a chronological relationship between the works of art through the museum, the circulation pathways are built differently
Color and lighting	• The building's base color is light grey • The gray color of the walls and floors reflects on the installed artworks • The natural light is absorbed by wide openings.
Finishing materials	• The base material is concrete and steel columns • The existing structure like steel and glass.
Furniture and fixture	• There are several rectangular benches.
Security	• The entry control room, right before entering the museum site. • It is forbidden to take flash photographs within the museum • Also, no food or drinks are allowed around the collections
Environmental factors	• The Istanbul Modern has wide glass openings that provide the interior space with daylight • The ventilation system is supported on the top by exposed steel channels

4.3 Summary of the Chapter

The assessment of museums in various regions is written in this chapter and case studies are also discussed in depth. In the fourth chapter, we examined eight examples of industrial heritage that have become cultural and artistic places. These eight buildings are:

1. TATE MODERN the former Bankside Power Station transformed to Art Gallery in England by Herzog & De Meuron
2. BALTIC CENTRE the former Flour mill transformed to Centre for Contemporary Art in England by Ellis Williams Architects
3. The Musée D'ORSAY the former Train station transformed to Museum in France by ACT Architecture
4. Fondazione Prada the former Distillery dating transformed to institution dedicated to contemporary art and culture in Milan by Rem Koolhaas
5. Kuppersmuele the former Warehouse transformed to Museum in Germany by Herzog & De Meuron
6. LANITIS CENTRE the former Carob Mill transformed to Carob museum in Cyprus by Christian Christou
7. NIMAC the former Old Powerhouse transformed to Arts Centre in Cyprus by Nicosia City Council
8. Istanbul Museum of Modern Art the former Warehouse transformed to Museum in Turkey by Tabanlıoğlu Architects.

Then we examined the mentioned buildings with seven extraction factors (Including : Plan schema / Circulation and accessibility / Color and lighting / Finishing materials / Furniture and fixture / Security / Environmental factors) from theoretical studies.

Chapter 5

CONCLUSION

5.1 Conclusions

This study has focused on the adaptive reuse of industrial heritage buildings into museums. Throughout the research, we have seen that the industrial heritage buildings are particularly adaptable to different functions due to their specious open spaces. It should be emphasized that, when no other option for industrial operation is available, an adaptive reuse strategy can be used for this type of buildings, and this proposal should be preferred over demolition and reconstruction, not only for the purpose of heritage conservation, but also as a sustainable and creative act.

There are various reuse options for industrial buildings however cultural and art-related subjects, especially museums, seems to be particularly suitable for these kinds of buildings due to their specious volumes in the interiors. While conserving this heritage with all its tangible and intangible aspects, a new kind of space is being created where it is impossible to experience in a newly-designed building (Brooker & Stone, 2006; Ashtiani, 2006). Industrial buildings are originally designed to receive a large amount of natural light, which is ideal for all types of human activities. When converting their structures to be functional again, these valuable aspects can be integrated based on the needs of the new use.

In addition, since these buildings are already designed to achieve optimal indoor environmental conditions, ventilation and thermal comfort factors are suitable to create environments with maximum comfort. Considering all this, we can state that industrial heritage buildings have a high capacity for adaptability. In terms of design concepts, a special feature of industrial heritage is that its structures are honest and built to serve their purpose. They are in the most practical form, and their forms are nothing more than representations of the processes and mechanisms they have adopted in their time.

It can be said that the beauty of their design is the sincerity of expression, where materials are generally used as naked or uncovered considering industrial buildings. However, the scale, functionality of architecture, engineering technology of sturucture and interiors have created unprecedented challenges for protection, which in many cases have led to a combination of creative solutions for the conservation and continuity.

Considering the specified eight case studies of this research, it was aimed at selecting industrial buildings, which have been pioneers of the adaptive reuse projects in their subject matter especially from the central Europe as;

1. Tate Modern, London, UK. The former Bankside Power Station transformed to Art Gallery by Herzog & De Meuron.
2. Baltic Centre for Contemporary Art, London, UK. The former Flour mill transformed to Centre for Contemporary Art by Ellis Williams Architects.
3. The Musée D'Orsay, Paris, France. The former Train station transformed to Museum by ACT Architecture.

4. Fondazione Prada, Milan, Italy. The former Distillery dating transformed to institution dedicated to contemporary art and culture by Rem Koolhaas.
5. Kuppersmuele Museum, Germany. The former Warehouse transformed to Museum by Herzog & De Meuron
6. Lanitis Centre, Limassol, Cyprus. The former Carob Mill transformed to Carob museum by Christian Christou.
7. NIMAC (Nicosia Municipal Arts Centre), Nicosia, Cyprus. The former Old Powerhouse transformed to Arts Centre by the Nicosia City Council.
8. Istanbul Museum of Modern Arts, Istanbul, Turkey. The former Warehouse transformed to Museum by Tabanlıoğlu Architects.

Conservation of industrial heritage with all its special characteristics and at the same time, creation of a new space has been a whole new experience, exploring the pioneer examples of this topic as case studies. For instance, the Tate Modern is considered as a national landmark in London, and the Baltic building has given Newcastle, England, a special cultural identity, as well as the Kuppersmuele Museum in Düsseldorf, Germany. The restructuring of the cultural heritage of Cyprus acts as a tourist identity of a nation and is reminiscent of the glorious past of the land, and the creation of a modern museum of industrial heritage in Turkey makes it one of the most culturally advanced cities in Europe.

For the purpose of this thesis, the mentioned buildings were analyzed in seven factors affecting their interior design. These are; the plan schema; circulation and

accessibility; color and lighting; finishing materials; furniture and fixtures; security; and environmental issues, as factors extracted from theoretical studies.

Accordingly, in terms of plan schema, it should be stated that the open plans as characteristics of industrial buildings is found to be highly functional for the museum purpose, creating flexibility to display art works of different sizes. The spacious volume of industrial heritage buildings is also an important aspect in terms of the display of especially contemporary art works. Proportions considering openings, especially the ceiling-high windows, are an additional value that these heritage buildings can bring to contemporary lives of their users.

Spectacular staircases, due to increased ceiling heights, is also an element that should not be underestimated. We also observed that, ramps, elevators and all the necessary requirements for inclusive design has been considered, especially at the entrances.

In terms of circulation and accessibility, we observed that generally open spaces have central access to stairs and elevators. Generally, glass doors and lifts are preferred as a part of open circulation, with an intention to make the entire space visible to visitors, for a continuous visitor circulation. Exhibitions are arranged in a consecutive sequence as a part of circulation planning. Generally, following the entrance, the information desk, locker room and museum store are also located.

In terms of colour and lighting, as one of the characteristics of industrial heritage buildings, we observed full height windows, and large openings for daylighting. However, a combination of natural and artificial light is used for better display. The stairwells are generally illuminated by hidden lights. Within the galleries, neutral

colours such as white and grey are being used, sometimes incorporated with neon lighting, such as in the Tate Modern gallery.

In terms of finishing materials, we observed that these industrial heritage spaces are characterized by exposed polished concrete, brick, however, materials used, can range from steel, aluminum, glass, plaster, plastic, wood, to perforated sheet metal, concrete and travertine. Therefore emphasizing a historic brick façade, is very typical, like a large, walk-in sculpture; where the white-cube interior design, is preferred in the interiors.

In terms of furnitures and fixtures, generally furniture design is minimal and in harmony with contemporary art of the twentieth century and the white-cube effect. In some cases, such as considering Fondazione Prada, designer furniture are preferred, where it incorporates Mies van der Rohe's Brno Chair, and also some of the original furnishings designed by Philip Johnson and, in particular, Mies van der Rohe's furniture designs.

In terms of security, related to contemporary needs, Exit and fire alarm boxes, Sensors, smoke detectors, loudspeakers, sprinklers and CCTV are all incorporated to these heritage buildings, and are being designed as a part of general design strategy. Additionally, it is forbidden to take flash photography within the museum, and around the collections.

Considering environmental values, we should state that, re-using an existing structure, beyond all its cultural significance values, is an environmentally friendly and

responsible act, in addition to all the creativity in this process. Therefore, we can state that, all of the case studies are transformed with a sustainability vision.

5.2 Final Remarks

The process of designing new architecture on top of existing historical structures is a complex and sensitive process that has to be considered with all its dimensions. For the storage of the current memory, it can be considered as the process of forming a new memory in the form of a building.

Industrial heritage buildings, once been very functional and then out-of-use, have proved that they can be functional again for a totally new purpose as museum. The spatial characteristics of these buildings, will continue to attract attention, no matter how the contemporary needs of the users will change in the future, as long as we manage to conserve them for the future generations.

Future work related to adaptive re-use of industrial heritage should include more case studies, not only analyzing projects from the Central Europe, but from all around the world, in order to explore different approaches in this multi-disciplined era.

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