

Evaluation of the Contemporary Art Museums with Emphasis on Interior Design Features

Noushin Hayatdawood

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Approval of the Institute of Graduate Studies and Research

Prof. Dr. Elvan Yılmaz
Director

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

Prof. Dr. Uğur Dağlı
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.

Asst. Prof. Dr. Nazife Özay
Supervisor

Examining Committee

1. Asst. Prof. Dr. Kağan Günce

2. Asst. Prof. Dr. Nazife Özay

3. Asst. Prof. Dr. Rafooneh Sani

ABSTRACT

This thesis investigates the interior design characteristics that have significant effect on the contemporary art museums. There are different types of museum that have some similar rules in common. It tries to analyze one specific museum type that is contemporary art museum, due to interior design features in case of six examples. Case studies are selected from six different countries around the world and categorized in two groups due to the building type, which is originally designed as museum and adaptive-reused type of museum building. Data collection has been done through literature survey, photography, scholarly articles and documentary movies. It uses qualitative method of research. In the first chapter, necessary factors due to defining interior design of contemporary art museums have been mentioned. Second chapter is dedicated to the process of evolving museums throughout the history; explain the general information about museum buildings and their type. In the third chapter, design of museum building is analyzed due to interior design factors that are Light and color, functional arrangement, circulation and accessibility, security, environmental factors, finishing material, exhibition units and furniture and style. The fourth chapter is the analysis of case studies in detail and extracts their similarity and differences in the inventory tables. The whole information and findings in this research are aimed to extract the common procedures that contemporary art museums utilize to be consistent and successful. As the conclusion, some common rules and regulations in contemporary art museums are derivate.

Keywords: museum design, Contemporary art museum, interior design

ÖZ

Bu tez çağdaş sanat müzeleri üzerinde önemli bir etkiye sahip olan iç mekan tasarım karakteristiklerini incelemektedir. Farklı çeşit sanat müzelerinin ortak olarak sahip olduğu bazı genel tasarım prensipleri vardır. Bu çalışmada temel olarak ele alınan çağdaş sanat müzelerinden, farklı ülkelerde yer alan altı önemli örnek seçilmiştir. Seçilen bu örnekler orjinal olarak müze olarak tasarlananlar ve sonradan kullanımı değişerek müzeye dönüştürülenler olarak iki kategoride incelenmiştir. Her iki kategori için seçilen üçer örnek, iç mekan tasarımı için önemli olan ışık ve renk, fonksiyonel kurgu, dolaşım ve erişilebilirlik, güvenlik, çevresel faktörler, bitirme malzemesi, sergi üniteleri, mobilya ve genel tasarım tarzı ele alınarak analiz edilip sonuçları karşılaştırılmıştır. Çalışmada genel olarak literatür taraması, yerinde gözlem, fotoğraflama, ve belgesel filmler aracılığı ile yapılmıştır. Bu araştırmada genel olarak nitel yöntem kullanılmıştır.

Tezin birinci bölümü çalışma hakkında genel bilgi vermektedir. İkinci bölüm ise müze kavramını hakkında bilgi verip, tarih boyunca müzelerin gösterdiği gelişimi ve farklı çeşitlerini ortaya koymaktadır. Üçüncü bölümde çağdaş müze binalarının tasarımına değinilip, özellikle iç mekan tasarımı, ışık ve renk, fonksiyonel kurgu, dolaşım ve erişilebilirlik, güvenlik, çevresel faktörler, bitirme malzemesi, sergi üniteleri, mobilya ve genel tasarım tarzına bağlı olarak tartışılmıştır. Dördüncü bölüm analiz çalışmalarını kapsamaktadır. Belirtilen iç mekan tasarım kriterleri ele alınarak seçilen örnekler analiz edilip, karşılaştırma çalışması yapılmıştır. Bu araştırmada elde edilen bulguların, çağdaş sanat müzelerinin iç mekan tasarımına ışık tutması hedeflenmiştir. Ayrıca, orjinal olarak müze olarak tasarlananlar ve

sonradan kullanımı deęişerek müzeye dönüştürülenler arasındaki iç mekan tasarımına dair farklı yaklaşımları ortaya koymaktadır.

Anahtar kelimeler: müze tasarımı, çağdaş sanat müzesi, iç mekan tasarımı.

DEDICATION

First and foremost, I wouldn't have the courage to write this thesis without God's help. After that, this is dedicated to my beloved family whom without their support, this thesis would be incomplete ...

To my mother for her patience and kindness;

To my father, who always encourages and supports me;

To my brother, who has always believed in me for who I am.

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TABLE OF CONTENTS

ABSTRACT.....	iii
ÖZ.....	viiiiv
DEDICATION.....	vi
ACKNOWLEDGMENT.....	vii
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xii
1 INTRODUCTION.....	1
1.1 Problem Statement.....	3
1.2 Aims and Research Objectives.....	4
1.3 Methodology.....	5
1.3.1 Organization of the Research.....	6
1.4 Limitations and Delimitations of the Study.....	7
2 GENERAL INFORMATION ABOUT MUSEUM BUILDINGS.....	8
2.1 Definition of the Museum.....	8
2.2 Origin of Museums.....	9
2.3 Types of Museum.....	24
2.3.1 History Museums.....	25
2.3.2 Natural History Museums.....	25
2.3.3 Science Museums.....	25

2.3.4 Art Museums	26
2.4 Types of Art Museum	27
2.4.1 Painting, Drawing and Sculpture	27
2.4.2 Photography	28
2.4.3 Media Arts.....	29
2.4.4 Installation Arts	29
2.4.5 Performance Arts	30
2.4.6 Contemporary Arts.....	31
2.5 Summary of the Chapter	32
3 DESIGN OF THE MUSEUM BUILDING	34
3.1 General Design Issues of Museum Buildings	34
3.2 Museum Buildings	35
3.2.1 Buildings Originally Designed as Museums.....	36
3.2.2 Museum Buildings Adapted to Museum	37
3.3 Interior Design Aspects of Museum Buildings.....	40
3.3.1 Functional Arrangement, Circulation and Accessibility.....	41
3.3.2 Color.....	46
3.3.1 Light	49
3.3.1.1 Lighting types	51
3.3.1.2 Adaption of light Resources.....	55
3.3.4 Finishing Material	57
3.3.5 Exhibition Units and Furniture.....	65

3.3.6 Security	68
3.3.4.1 Safety of objects	69
3.3.4.2 Safety of people.....	72
3.3.7 Environmental Factors	74
3.3.8 Style	78
3.4 Summary of the Chapter	81
4 CASE STUDIES AND ANALYSIS.....	82
4.1 The Evolution of Museums in Different Regions	82
4.2 Method of Analysis	85
4.3 Case Studies	87
4.3.1 Museums Originally Designed as Museum	87
4.3.1.1 Solomon R. Guggenheim Museum	87
4.3.1.2 Pompidou Center.....	96
4.3.1.3 Tehran Contemporary Art Museum, Tehran, Iran	103
4.3.2 Buildings Adapted to a Museum.....	110
4.3.2.1 Tate Modern	110
4.3.2.2 SCAD Museum of Art (Savannah College of Art and Design) ...	118
4.3.2.3 Istanbul Modern	127
4.4 Inventory Tables.....	134
4.5 Summary of the Chapter	143
5 CONCLUSION	144
REFERENCES.....	147

LIST OF TABLES

4.1 Inventory Table	86
4.2 Solomon R. Guggenheim Museum.....	132
4.3 Pompidou Center.....	133
4.4 Tehran Museum of Contemporary Arts	134
4.5 Tate Modern	135
4.6 SCAD Museum of Art	136
4.7 Istanbul Modern	137
4.8 Comparison Table	138

LIST OF FIGURES

Figure 2. 1 Alexandria Library and Museum 3rd century B.C, Egypt.....	9
Figure 2.2: Samuel F. B. Morse’s ‘Gallery of the Louvre’ (1832-3).....	10
Figure 2.3: Curiosity Cabinet from Renaissance period	10
Figure 2.4: Ashmelean Museum Building, UK	11
Figure 2.5: Inside the New-look Ashmelean Museum, UK.....	11
Figure 2.6: British museum in 1753, London, England.....	11
Figure 2.7: Louvre Museum, Paris, France.....	12
Figure 2.8: Cristal Palace, London, England 1851 (.....	14
Figure 2.9: Interior space of Cristal Palace, London, England 1851	14
Figure 2.10: Palace of Industry, Universal Exposition, Paris, France 1855 Noblet ..	15
Figure 2.11: Universal exhibition, Vienna, Austria 1873	16
Figure 2.12: Universal Exposition, Eiffel Tower was the Symbol of this Exposition, 1889, Paris, France	16
Figure 2.13: Chicago world fair, using light for the first time, Chicago, United States, 1893.....	17
Figure 2.14: Chicagoworld fair, 1893	18
Figure 2.15: The Panama Pacific Exposition,San Francisco,USA,1915	19
Figure 2.16: Poble Espanyol (Spanish Village), Barcelona, Spain,1929.....	19
Figure 2.17: International exposition, Paris, France,1937	20
Figure 2.18: World Expo, New York, USA, 1939.....	20
Figure 2.19: Atomium, Brussels, Belgium, 1958	21
Figure 2.20: Philips pavilion, World Fair,Brussels, Belgium, 1958	21
Figure 2.21: Seattle World Exhibition,1962, USA	22

Figure 2.22: New York World Exhibition,1964 , USA	22
Figure 2.23: Expo '67, World Exposition in Montreal, Canada, 1967.....	22
Figure 2.24: Osaka world expo, Japan,1970	23
Figure 2.25: Expo'70, Osaka, Japan	23
Figure 2.26: Seville World Exposition, Spain	23
Figure 2.27: Expo 2000, Hannover, Germany	24
Figure 2.28: History museum, British Museum, London, England.....	25
Figure 2.29: Natural History Museum, Paris, France	25
Figure 2.30: Santral Istanbul, Istanbul, Turkey	26
Figure 2.31: The museum of modern arts, Wakayama, Japan	27
Figure 2.32: Vangogh Paintings, Philadelphia art Museum, USA	28
Figure 2.33: African art, Neuberger art museum, New York, USA	28
Figure 2.34: Installation of photographs, National portrait gallery, London.....	29
Figure 2.35: Media art (video art), Salt Gallery, Istanbul, Turkey	29
Figure 2.36: Installation art.....	30
Figure 2.37: David Cunningham Projects at New Langton Arts theater: Austin McQuinn, more info is available in the website	31
Figure 2.38: Tilda Swinton's Live Performance Art of Sleeping in a Box At MoMA	31
Figure 2.39: Baloon dog, museum of contemporary Arts, Chicago	32
Figure 2.40: Digital art photography by Miki Takahashi	32
Figure 2.41: Body art by Billy Edge	32
Figure 2.42: Video installation art, Vantaa Art Museum, Helsinki, Finland, 2003 ...	32
Figure 3.1: Guggenheim Museum, Bilbao, Spain (LeCuyer, 2003)	37

Figure 3.2: Santral Istanbul, Turkey	39
Figure 3.3: Gathering hall, Van Gogh Alive exhibition, Istanbul, Turkey	42
Figure 3.4: Guide map, Louvre Museum, Paris, France	42
Figure 3.5: Circulation paths, spiral interior plan, Guggenheim Museum, New York, USA.....	43
Figure 3.6: Directed approach, one accessible path.....	44
Figure 3.7: Suggested approach two ways but it leads the eyes to one of them	44
Figure 3.8: unstructured approach, path is depends on the visitor's choice	44
Figure 3.9: Open plan organization, Gippsland Art Gallery, Victoria, Australia	45
Figure 3.10: 'WE ARE HERE', Interior guiding map about the current situation, Pompidou Art Center,Center, Paris, France.....	46
Figure 3.11: What is needed for light to be seen?.....	47
Figure 3.12: Using light colors for coloring up the walls, Museum of Modern Art, Wakayama, Japan.....	48
Figure 3.13: Using darker color for historical artworks, Michael C. Carlos Museum, Amory University, Atlanta, USA.....	48
Figure 3.15: Color differences between colors of the walls, Amon Carter Museum, Texas, USA	49
Figure 3.16: Alternatives for admitting daylight into museum space.....	53
Figure 3.17: Innovative clerestory window day lighting, The Menil Museum, Houston, USA	53
Figure 3.18: Filtered side light from windows, Brandhorst Museum, Munich, Germany.....	53

Figure 3.19: Different lighting instruments	54
Figure 3.20: different sizes of LED.....	55
Figure 3.21: different types of LED.....	55
Figure 3.22: example of using LED in Berne Art Museum, Switzerland.....	55
Figure 3.23: Fiber Optic light wires	55
Figure 3.24: Example of using fiber optic light in display case in a museum	55
Figure 3.26: Different types of luminaires in interior space	57
Figure 3.27: Using carpet in a temporary exhibition, National Museum of wildlife art, Jackson, USA.....	59
Figure 3.28: Linoleum flooring, Milwaukee Museum, USA.....	60
Figure 3.29: Using stone (left) and parquet (right) in Museum space	61
Figure 3.30: Floor coverings comparison due to their contaminants and features	61
Figure 3.31: Concrete flooring (Concrete floor contractors association.....	62
Figure 3.32: Different usage of panels in buildings.....	64
Figure 3.34: Self-standing Central Display Unit, Vertical Case	66
Figure 3.35: Self-standing Central Unit, Horizontal Case	66
Figure 3.36: Wall mounted display cases, Louvre Museum	67
Figure 3.37: Corner case, Shelf unit	67
Figure 3.38: Close Display Platform.....	67
Figure 3.39: Interactive units, Santral Istanbul Museum, Turkey.....	68
Figure 3.40: Interactive Display unit	68
Figure 3.41: Secured window, Louvre Museum, Paris, France	70
Figure 3.42: Wall mounted paintings in Louvre Museum, Paris, France	71

Figure 3.43: Mona Lisa painting in a glass case, Louvre Museum, Paris, France	71
Figure 3.44: An antique objects which is protected by a glass on the wall, Louvre Museum, Paris, France.....	71
Figure 3.45: Protective fences, antique Iran, Louvre Museum, Paris, France	71
Figure 3.46: Display case, Louvre Museum, Paris, France	72
Figure 3.47: emergency exit sign and fire detector.....	73
Figure 4.1: Louvre Museum and its new Pyramids, Paris, France	84
Figure 4.2: Louvre Museum, Main Entrance, Paris, France	84
Figure 4.3: Edo- Tokyo Museum, Japan.....	85
Figure 4.4: Edo-Tokyo Museum, Japan.....	85
Figure 4.5: Edo- Tokyo Museum interior, Japan.....	85
Figure 4.6: Edo- Tokyo Museum interior, Japan.....	85
Figure 4.7: Solomon R. Guggenheim Museum at the time of inauguration.....	89
Figure 4.8: Solomon R. Guggenheim Museum, interior view from rotunda.....	89
Figure 4.9: Solomon R. Guggenheim Museum and the extended block	90
Figure 4.10: Guggenheim Museum plan.....	90
Figure 4.11: Rotunda, Solomon R. Guggenheim Museum.....	91
Figure 4.12: Guggenheim Museum circulation and orientation	92
Figure 4.13: Auditorium,Solomon R. Guggenheim Museum.....	92
Figure 4.14: Wright's Restaurant, Guggenheim Museum.....	92
Figure 4.15: Light and Color in Solomon R. Guggenheim Museum.....	93
Figure 4.16: Solomon R. Guggenheim Museum, Interior space	94

Figure 4.17: John Chamberlain Choices exhibition, February May, 2012, Guggenheim Museum	94
Figure 4.18: Zaha Hadid's Exhibition in Solomon R. Guggenheim Museum	94
Figure 4.19: Ad-hoc Furniture made by Frank Lloyd Wright in the Rotunda, Solomon R. Guggenheim Museum ,USA	95
Figure 4.20: "Hanging out in the Museum", Cai Guo-Qiang, Guggenheim Mueum	95
Figure 4.21: Matt glass and air conditioning system, Solomon R. Guggenheim Museum.....	96
Figure 4.22: Centre Pompidou, front view and piazza, Paris, France.....	97
Figure 4.23: Pompidou Center, general view	98
Figure 4.24: Different sections in Pompidou Centre	98
Figure 4.25: Lobby of Pompidou Center, Paris, France	99
Figure 4.26: Plan for permanent collection's floor in Centre Pompidou, Paris, France	99
Figure 4.27: Finishing material, color and lighting in Pompidou Modern Art Museum, permanent collection	100
Figure 4.28: Display units and furniture, Pompidou Center, Paris, France	101
Figure 4.29: Security factors in Pompidou Centre, 1&2: fences, 3: check-in point, 4: fire protector & exit sign, 5: guiding map.....	102
Figure 4.30: Tehran Museum of Contemporary Arts, Iran	103
Figure 4.31: Museum of Contemporary Arts , Tehran, Iran	104
Figure 4.32: Circulation Plan	105
Figure 4.33: Spiral ramp which leads to the galleries	105
Figure 4.34: Wind-catchers (Badgir) as the day lighting sources in the building and projectors as the artificial illuminants	106

Figure 4.35: Finishing materials	107
Figure 4.36: wall-mounted artworks, Museum of Contemporary Arts of Tehran	107
Figure 4.37: Protection and ventilation system in the museum	108
Figure 4.38: Vestibule (Hashti), check-in point.....	109
Figure 4.39: 'Matter and Mind' by Noriyuki Haraguchi, reminds of pond in Iranian architecture.....	110
Figure 4.40: Four-way and passage way between galleries.....	110
Figure 4.41: Tate Modern Art Gallery, London, England	111
Figure 4.42: Tate Modern , London, UK	111
Figure 4.43: Tate Modern Gallery plan schema.....	112
Figure 4.44: Tate modern gallery west section (.....	112
Figure 4.45: Tate Modern circulation and accessibility.....	113
Figure 4.46: Turbine hall, Tate modern	113
Figure 4.49: Use of Fonts and Numbers to Emphasis, Tate Modern.....	115
Figure 4.51: Polished concrete, furnishing material at Tate Modern.....	115
Figure 4.52: Oak wood, finishing material at Tate Modern.....	115
Figure 4.53: Display units and furniture, Tate Modern	116
Figure 4.54: Tate Modern, interior space.....	117
Figure 4.55: floor ventilation system, Tate Modern	118
Figure 4.56: Savannah College of Art and Design (SCAD museum of art), Georgia, USA.....	119
Figure 4.57: Savannah College of Art and Design (SCAD museum of art) plan	120
Figure 4.58: SCAD Museum of art circulation plan	121

Figure 4.59: Interactive touch-Screen Guide table in the Main Lobby, SCAD Museum of Art	121
Figure 4.60: Pamela Elaine Poetter Gallery	121
Figure 4.61: SCAD Museum, Pamela Elaine Poetter Gallery	122
Figure 4.62: roof light fixtures, SCAD Museum Interior Space.....	123
Figure 4.63: SCAD Museum of Art exterior view.....	124
Figure 4.64: SCAD Museum of Art interior view	124
Figure 4.65: Building condition Before revitalization. Most of timbers are used in reused in new function	124
Figure 4.66: Display units in SCAD Museum, Savannah, Georgia, USA.....	125
Figure 4.67: Interactive table, SCAD Museum of art	125
Figure 4.68: SCAD Museum benches.....	125
Figure 4.69: Exits and Barriers in SCAD Museum of art (SCAD Museum of Art)	126
Figure 4.70: ventilation system beneath the ceiling, SCAD Museum of Art	127
Figure 4.71: Vicinity of New and Old Material in the Museum Structure	127
Figure 4.72: Istanbul Modern Museum, Istanbul, Turkey	128
Figure 4.73: Istanbul Modern during the restoration	128
Figure 4.74: Istanbul Modern Plans, up: first floor, down: ground floor	129
Figure 4.75: entrance ramp, Istanbul Modern Museum, Turkey	130
Figure 4.76: Interior Design Organization, Istanbul modern Museum , Turkey	130
Figure 4.77: Restaurant in Istanbul Modern	131
Figure 4.78: Istanbul Modern Staircase, Monica Bonvicini	131
Figure 4.79: color and light condition in Istanbul Modern Museum	131

Figure 4.80: Istanbul Modern Interior, upper floor 132

Figure 4.81: Istanbul Modern's upper floor 133

Figure 4.82: Istanbul Modern's lower floor that hosts temporary exhibitions 133

Chapter 1

INTRODUCTION

Collecting and conserving objects have a long history. Cave paintings, which were used in rituals, had a great impact on human at that time. They believed that these paintings can improve their power in hunting and fertility. So, keeping the objects such as sculptures, and paintings were momentous for them. All ancient civilizations, kept their precious staffs in temples, cemeteries and castles. Even with the passing of time, tradition of collecting and conserving objects is still alive (Alexander, 1979).

A Museum is a non-profit institution that is assigned as a place of exhibition and conservation of valuable objects and artworks. It provides an environment for studying and interpreting historical, scientific and artistic works (Dillenburg, 2011). The term *Museum*, is derived from a Latin word ‘mouseion’, which means *the place of Muses*, and instated as an institution of contemplation; a place where the scientists and philosophers gathered and discussed with each other. According to this interpretation, the great Alexandria Museum and Library, which founded in 3rd century B.C, was the first museum of the world. It was a place for scholars and can be named as a university more than a place of preserving materials. 17th century was the time of using the word *Museum*, to describe the collection of curiosities. By now, the term museum is being used as a place of conserving every type of precious collections (Lewis, 2013).

The Museum is responsible for preparing a secured place for artifacts and artwork to be preserved, exhibited and being used for visitors to study and pleasure. It provides a public space for all visitors, with specific visiting hours and enough research opportunities. One of the main roles of a Museum is to be comprehensible for visitors of all ages. Its message should be intelligible and let the visitors being engaged with it (Willie, Dusome et al, 2003).

A museum cares for the collections that have historical, scientific or artistic value and prepare them for public through temporary or permanent exhibitions. It could be said that, it also brings the past to the present and make it alive once more. It can be a well presentation of the history in various periods. Museum helps people to feel the history or realize the feeling of the artist in time of creating the work of art. As of the day, that Museum was opened to public in late seventeenth century, until today, there occurred a noticeable change in people's attitude. They prefer to visit a multi-functional environment that can have research areas and communicate in the meantime in one place. This idea let the Museums and its architecture, experiencing a new path. It was then understood that, a building that is used as a museum can be utilized as an artwork itself. Since 20th century, renovating and converting old building as a new function came into the museum's world. Old storages and abandoned buildings that were converted into Museum building with multi-functional purpose opened their way into the modern architecture. A cultural institution, with exhibition halls, library, café, restaurants and cinemas is more equipped for calm diverse state of mind than a solitary exhibition hall. As time passed, people began to realize that temporary exhibitions are more operational than permanent ones. A multi-reason space can confront mixture of shows and a while

later; variety of visitors with distinctive orientations would come and visit (Desvallées et al, 2010).

1.1 Problem Statement

Nowadays, with changes in people's attitude, curators try to improve their contact with the society to be able to keep the museum stay open. Museums which lose their contact with the society, will not last for a long time. Museum is a multi-cultural place that is host for various groups of people from different ages. Each person chooses his/her favorite type of museum according to his/her orientation. Since the building itself, is one of the significant factors that affect visitors during their visit, having a well-equipped and organized building is indispensable. A well-designed one can make people get more interested about being in the museum space. Yet, an unconsidered design lead people feel disgusted. Accordingly, considering a parallel relation between space qualities and exhibited objects is essential. Nowadays, museum space is a place to gather, leisure, experience and research. In contemporary life, this is the main reason of helping the consistency of museum visiting and people's patronage. By this reason, a contemporary art, which is more familiar for people to feel and interact, should be place in a proper environment.

Contemporary arts might be recognized in various ways. Each person has specific impression in case of various sorts of arts. Sometimes, the art take its significance from the spotted space, or its perceived content alters in the museum space. In permanent museum spaces, art objects are fixed in their place. Furthermore, interior design characteristics must be considered for their constant stay. On the contrary, temporary exhibitions are host different artworks with various characteristics. In this

case a comprehensive interior design plan should be done to sustain this precise group.

A contemporary art museum, which is the main concern of this study, has to arrange a convenient environment for different contemporary art categories, in order to assist artworks express their fundamental concept. In addition, contemporary art museum may assist the artwork being more comprehensible.

1.2 Aims and Research Objectives

The study specially focuses on the interior design aspects of museum buildings. The reason of actualization of this thesis is to deliberate two different types of contemporary art museums which are originally designed as museum and adaptive-reused type of museum building. Permanent and temporary collection may be exhibited in both of these buildings. Accordingly, interior design considerations are essential in both cases. Light and color, functional arrangement, circulation and accessibility, security, environmental factors, finishing material, exhibition units and furniture and style are leading interior design features that should be mentioned through the design process.

The selected case studies help to understand the interior design attitudes that have great impact on the people and representation of artworks. In term of making clear all the considerations, selected cases from the mentioned types of contemporary art museums are analyzed. Besides, this dissertation specifies the objectives below:

- To investigate visitor's best condition in contemporary art Museum building
- To investigate the best condition for collections and artworks

- To have a survey on the interior design characteristics that affect the collections, visitors and building
- To compare the interior designs of selected case studies to find the similarities and differences in the contemporary art museum design that are originally designed as museum and adaptive-reused type of museums

1.3 Methodology

The scope of the study is contemporary art museums with the focus on the originally designed as Museum buildings and adaptive-reused type of museums in two separate categories. Case studies that would be evaluated are selected from six different countries around the world in case of their reputation among people and art world. Data is collected through literature survey and field study.

The study focuses on the interior design characteristics of originally designed museum buildings and adaptive-reused museum buildings. Light and color, functional arrangement, circulation and accessibility, security, environmental factors, finishing material, exhibition units and furniture and style are the considered interior design features. The excuse of selecting these factors is based on the researches that are done by scholars on this factors and their importance on the well-being of the environment and visitors. It utilizes qualitative methodology. Data is collected through a profound survey on different trustworthy resources such as books, scholarly and journal articles, and reliable web resources.

Observation and field research, and photography are the other methods of data collection.

1.3.1 Organization of the Research

The study is begun with an introduction on how this topic is selected and how it is expanded. Aims and methodology is explained in this part to clarify the path in which this thesis is organized.

Second chapter will be the literature survey. It investigates the term *Museum* broadly. Then, a study on the creation of museums is going to be done. The last part of this chapter is an investigation about different types of museums due to their content.

In the third chapter, the design of the museum buildings is discussed. Then, they are studied according to the building operational model they have. To conclude this chapter, the main aim in the research, which is interior design aspects of museum buildings, is going to be written in detail.

In the fourth chapter, interior designs of museums in different regions are described at the beginning. Next, explains the method of case analysis and following, each case study is being surveyed with the assistance of interior design characteristics that are mentioned before. At the end, these cases are listed and in six inventory tables that contain all the described features of a museum building. These cases are compared with each other in different characteristics in case of some charts and explanations.

Fifth chapter will be the conclusion part. All the findings will be summarized and some ideas and recommendations will be reflected related with the contemporary art museum design for future surveys.

1.4 Limitations and Delimitations of the Study

The data has been calculated about contemporary art museums and the chosen type is originally designed museum building in one category and adaptive-reused type of museums on the other side. The reason of choosing contemporary art museum is its familiarity that makes it more understandable for contemporary people. Interior design features of the museum building, by having some accurate research on the reliable resources such as scholarly articles and books, are light and color, functional arrangement, circulation and accessibility, security, environmental factors, finishing material, exhibition units and furniture and style. This thesis tries to deliberate the selected factors accurately and make them clear by focusing on them. the Conversely, one of the delimitations of the study is lacking of enough proper adapted museum buildings types that are used as modern or contemporary art museums. Finding reliable resources is one of the other difficulties about this thesis.

Chapter 2

GENERAL INFORMATION ABOUT MUSEUM BUILDINGS

In this chapter, first the definition of the museum and the history are explained. Then, a short focus on the different types of museum is going to be done, and at the end of this chapter, different types of art museum are explained in some categories.

2.1 Definition of the Museum

Burcaw, 1983 claimed that, the term museum that is known today is the formation type of great world fairs from last century. As exhibiting objects became public, collections needs a safe place to settle and since a great amount of money have been spent for setup the world fairs, throwing the objects away after closing the exhibition was not economical and logical. So, museum buildings have been built up in order to preserve the exhibited works. Millions of people around the world visit the museums each year. This upward trend is the reason of increasing the number of museums in all kind over the world.

Lately, museum can defined as tourist attraction, stores, meeting place, food courts, urban renewal, gathering place, contemporary art house and social club. Its meaning differs according to the desire (Panero, 2012).

There are varieties of definitions available about the museums. Museums are coeducational institutions and it is not easy to define them in an integrated form. Museum basically is a place to house collections for study, research and enjoyment.

(Alexander, 1979). Continuously, the most recognized definition of museum that was given by ‘The International Council of Museums (ICOM)’ is written; museum is a non-profit, permanent institution that is open to public. It conserves, and exhibits objects, prepare an environment for people to study, research, gather, enjoy, communicate and learn (Desvallées. et al, 2010).

2.2 Origin of Museums

The story of museums goes back to approximately hundreds of years ago. Museum is a Latin word (in Greek it called mouseion) that has a variety of meanings through the centuries. However, faraway, in classical times, it held the meaning of a temple for Muses, who were nine young goddesses, who watched over the happiness of love, music, poetry, history and so on. The first museum of the world was found in Alexandria, Egypt, about third century B.C, which was an important center in the world. It was a library, like an academy of learning for scholars from all over the world; the greatest library of that time in ancient world. The information was gathered and written on papyrus rolls by Alexander the Great. Museum in thought of ancient people were the place to gather things such as historical, aesthetical magical and also religious that had value for them (Berty&Costa, 2009).

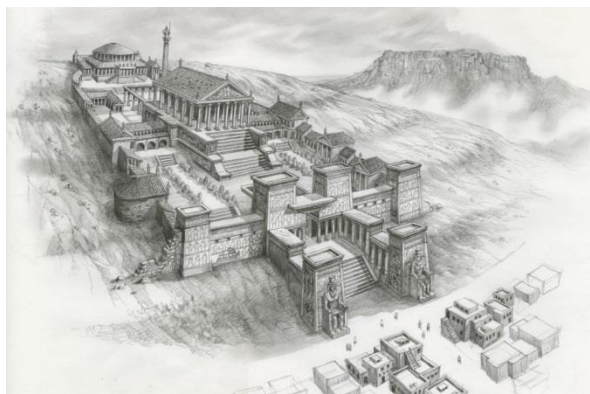


Figure 2.1: Alexandria Library and Museum 3rd century B.C, Egypt (Martinaw480, 2012)

Two words were important about museums during Renaissance Period; *gallery* or *Salon* that was a large hall, and full of light that was used as an exhibition area for exhibiting pictures and sculptures. And, *cabinet*; in discovery ages, interesting staff have been collected by collectors during their journeys and discoveries in a square shaped room. Their categories were still to be defined but modern vocabulary named them as, geology, natural history, archaeology, religious or historical antiques, works of art and antiquities. Both galleries and cabinets were rarely opened to public and it was a place for aristocrats (Figure 2.2 & 2.3). “This emphasis on collecting and showing objects for their entertainment value is a temptation for the art museum with its basic principle of collecting and exhibiting unique, wonderful things that create an emotional response in the viewer ” (Burcaw, 1983, p.26).



Figure 2.2: Samuel F. B. Morse’s ‘Gallery of the Louvre’ (1832-3) (La Farge, 2010)

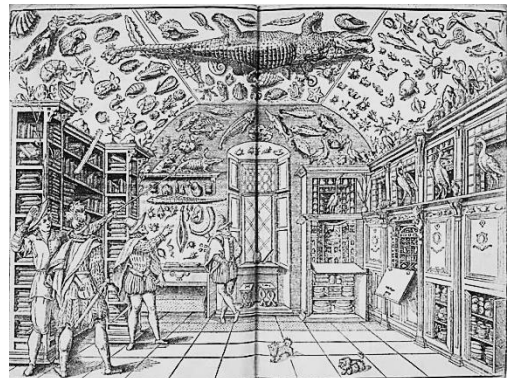


Figure 2.3: Curiosity Cabinet from Renaissance period (Macdonald, 2006)

The early and origin of exhibition has started with museums. Late seventeenth century was the time for museums to go public. Before, exhibitions were for noblesse. In 1671, Basel opened the first museum, but the first published museum was Ashmolean museum in 1683 century which opened its doors to public. (Figure 2.4 &2.5) (Madran, 2012). It was the art and antique Museum which housed the

collections of Ashmole, the historian that was given to Oxford University (Helicon Publishing, 2007).



Figure 2.4: Ashmelean Museum Building, UK (McLachlan, 2006)



Figure 2.5: Inside the New-look Ashmelean Museum, UK (BBC news, 2009)

The Vatican established several museums about 1750, and the British Museum was formed in 1753. It underwent some changes in 20th century such as library and Duveen Gallery (Figure 2.6). In 1793 France opened the Palace of the Louvre as the Museum of the Republic (Alexander, 1979) (Figure 2.7).

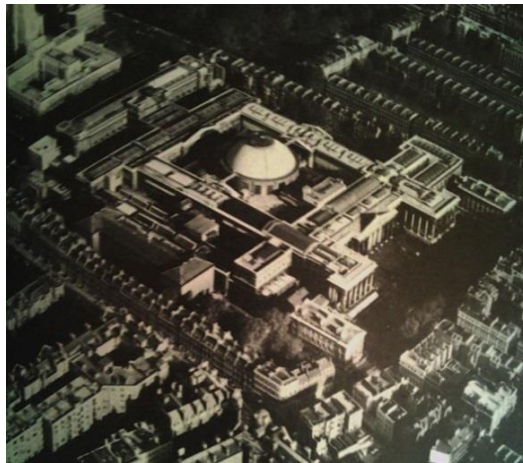


Figure 2.6: British museum in 1753, London, England (Caygill, 2009)



Figure 2.7: Louvre Museum, Paris, France (Author, 2013)

Yet, the museums were private and casual planned. The emphasis was on the collections which contained artworks, ancient rarities, scientific equipment botanical garden, menagerie and aquarium. There were no books or collections about natural sciences in 1800s. Its beginning was from the second half of 19th century (Burcaw, 1983). Collecting was an amusement for many people; It was that much important to the context of neglecting some important factors such as air conditioning. Exhibition was just for soothing the collecting fever. Conserving the objects was little understood at first. Collectors, even sometimes with obsession, have always taken care of their own hoards. But the techniques of conserving artworks were non-conductive, and almost all painting panels have disappeared. The Greeks made crude attempts to preserve votive shields by coating them with pitch to prevent rust, and they placed vats of oil at the feet of Phidias's *Athena Parthenos* to reduce excessive dryness. By the sixteenth century, paintings were being cleaned and revarnished, but not until nearly 1750 was the restoring process perfected that could transfer the layer of paint from its original wall, panel, or canvas to a new surface (Alexander, 1979).

Once the museum admitted the public, its exhibition function became predominant. At the beginning, displays were just to satisfy the scholars, aesthetics and collectors. But in nineteenth century, the exhibition function began to face an alteration. The

museum directors arranged huge halls for exhibitions and a big area around it. Temples and palaces were no longer accepted and attracting. Picnic and museum could be combined together where the whole family could enjoy. It was a walk toward modern life. The series of world's fairs that began with London's Crystal Palace (Londra) in 1851 contributed ever more spacious and dramatic systems of exhibition (Alexander, 1979). It became a symbol of Victorian self-confidence and it was a forum in which the entire world's industrialized nations could show their products; a symbol of international understanding through the free trade in manufacturing, goods and ideas (Davis, 1999). They tried to present the products to the world so they constituted the big commercial buildings to pursue this intention. The aims of the Great Exhibition of 1851 were clear enough. 'Great Britain offers a hospitable invitation to all the nations of the world, to collect and display the choicest fruits of their industry in her Capital', wrote Henry Cole in the first paragraph of the official catalogue. It symbolized the industry, military and economy excellence of Britain at that time. The Crystal Palace occupied 18 acres in Hyde Park. It contained 100,000 exhibits from nearly 14,000 contributors (Fisher, 2011). The first exhibition buildings were constructed in industrial ages. Universal exhibitions are the most important commercial ones in the world; huge structures of steel and glass were built (Figure 2.8). These are very important in architecture, both in historical and composition. At that time, people were interested in nature, so these types of buildings seemed very artificial. Therefore, some herbal elements such as fountains were added inside the building to make it more natural. This was in regard of makes it more comprehensible for general viewpoint at that period. The point that should be noticed here about their importance is that, they affected the public mentality about the exhibited objects and the environment where they were being shown. The profit

from the 1851 world expo was that much high that the Science and Industry Museum of Chicago, The National Oceanic and African Arts museum in Paris and the Victoria and Albert Museum in London were originated by that (Macdonald, 2006).

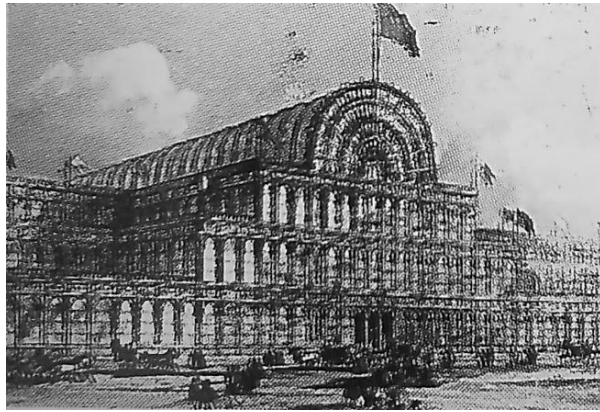


Figure 2.8: Cristal Palace, London, England 1851 (De Noblet, 1993)

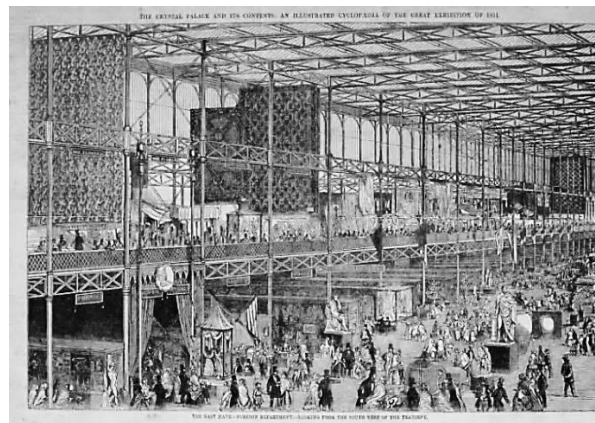


Figure 2.9: Interior space of Cristal Palace, London, England 1851 (Clark, 1852)

In 1855 and 1889 followed the exhibitions in Paris and in 1893 it was Chicago's turn (Figure 2.10). In between these big ones there were many other exhibitions, every other year, in most of the European countries and in their colonies, for example, in Australia and India (Hoffenberg, 2001). The form, the "world exhibition", lost much of its relevance after the outbreak of World War 1, and was replaced by national manifestation and autocratic demonstrations, for instance in fascist Germany and Italy. The exhibitions served as an arena to struggle between nations—by

peaceful means—over colonial and industrial dominance in an age signified by the “Invention of tradition” (Hobsbawm 1983).

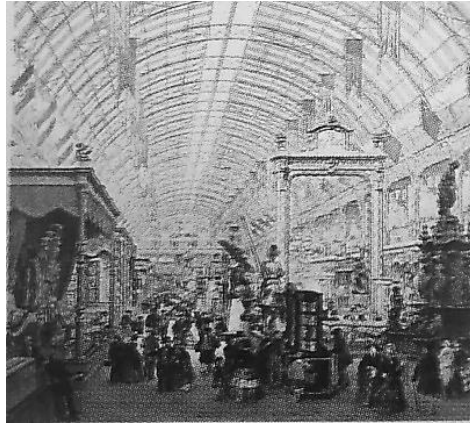


Figure 2.10: Palace of Industry, Universal Exposition, Paris, France 1855 (De Noblet, 1993)

After that of London in fact, during the years, a lot of Universal Expositions were organized that these expositions touched the most famous capitals of the world: Paris, Vienna, Melbourne and Paris again with the extraordinary Expo in 1889 from May 5th to October 31st 1889 entitled "Celebration of the Centennial of the French revolution", that had the theme of French Revolution's 100th year anniversary as a protagonist and left us the Tour Eiffel, the steel tower 300 meters high, especially built on this occasion.

To be more specific, the concept of the time was building just one enormous structure. However, Vienna 1873 universal exhibition significance is through its multiple identities; it means that, a wide environment had been allocated and it has several buildings together. Indeed, it was a social place for the whole family members to spend a day in the areas and enjoy there. At that time, the shortest time of holding an exhibition was approximately six months. People all around the world

would want to go there to visit the place. Thus, it took time for them to come and pay a visit to it. (Figure 2.11) (EXPO2000, n.d).

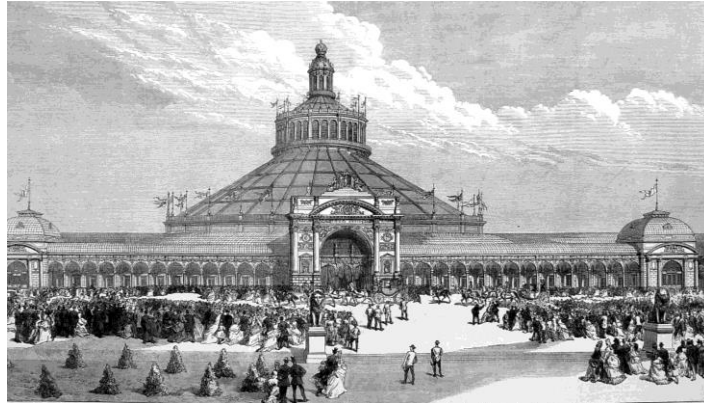


Figure 2.11: Universal exhibition, Vienna, Austria 1873 (Illustrated London News, 1873)

Construction of Eiffel Tower is a significant event of 1889, Paris. The entire zone was used for commercial exhibitions for over 30 years. However in 1889, government decided to manufacture a tower of steel. After the exhibitions terminated, legislators decided to demolish the structure. But, it seemed as if the demolition costs are even more that its construction. Thus, they left it intact. Now the Eiffel tower is the symbol of France, despite the beauty experts, who say this is the ugliest construction of France (Figure 2.12).

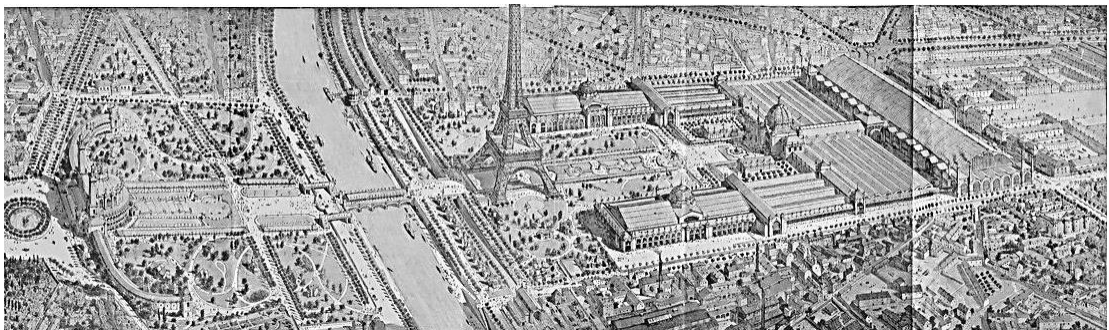


Figure 2.12: Universal Exposition, Eiffel Tower was the Symbol of this Exposition, 1889, Paris, France (De Tholozany, 2011)

Late 19th century was the time of using illuminants. At that time, the necessity of having more space to exhibit started to emerge. Natural lighting was the dominant illuminant. It was about to use artificial lighting to make it more visible and available for people to visit the place. It gives a chance of visiting the place even in the evenings when the sun is about to set (Madran, 2012) (Figure 2.13).



Figure 2.13: Chicago world fair, using light for the first time, Chicago, United States, 1893 (1893 Chicago world's fair-the world's Colombian exposition, n.d)

Subsequently, in 1893, Chicago World Fair, which was held to celebrate the 400th anniversary of Christopher Columbus' arrival in the New World in 1492, was an entertainment region where assigned for families which its privilege was created some attractions such as Luna Park and *pavilions* inside the area (Figure 2.14) (Madran, 2012).

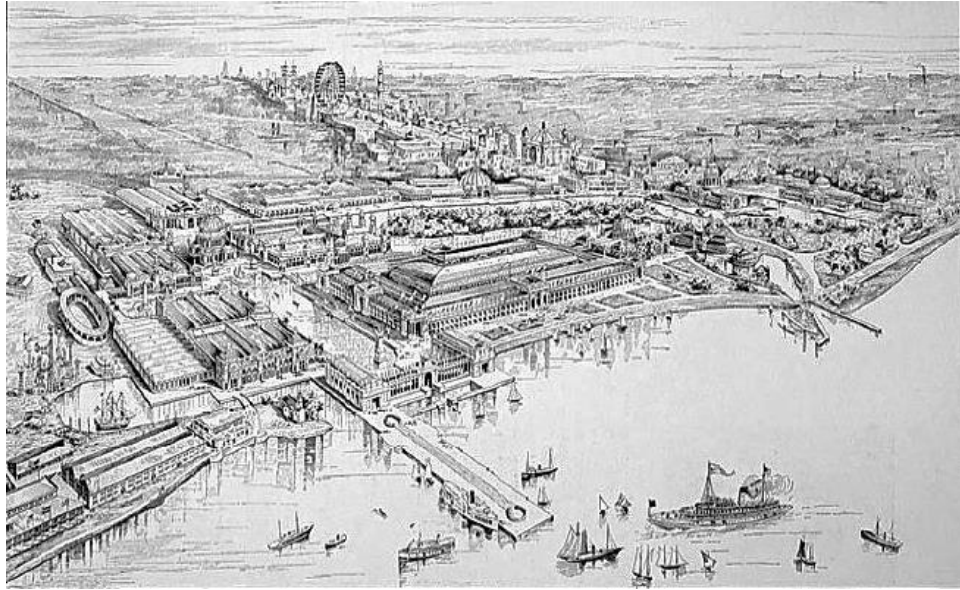


Figure 2.14: Chicagoworld fair, 1893 (The Newberry Library, n.d.)

The 1915 San Francisco Panama Pacific International Exposition was an international fair held to celebrate the opening of the Panama Canal. Planning began in 1904 and the Exposition was also seen as an opportunity to demonstrate the city's recovery from the 1906 earthquake. When it closed in December 1915, it had attracted almost nineteen million visitors. The exhibition was intended to be temporary. The buildings were made of wood, plaster, and burlap to make them easy to demolish. The only part of the exhibition to survive was the Palace of Fine Arts which was reconstructed in the 1960s from more permanent materials (Figure 2.15) (National Park Service, n.d).

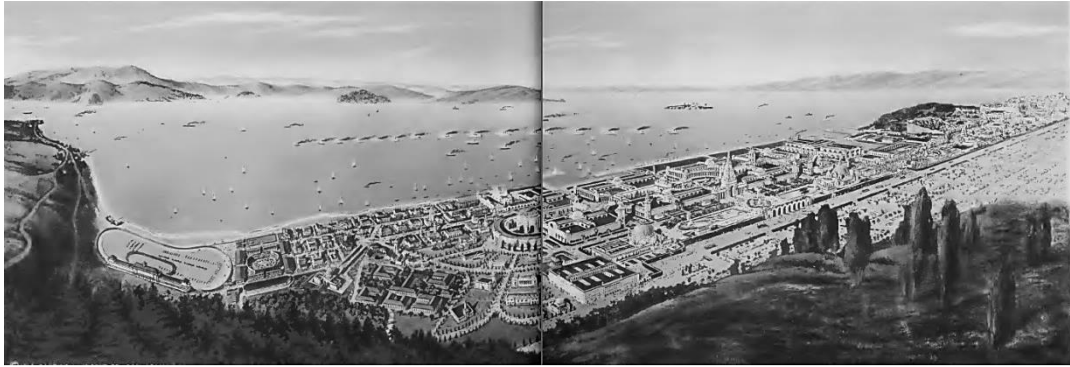


Figure 2.15: The Panama Pacific Exposition, San Francisco, USA, 1915 (Teich, 1915)

The first modern construction of the time was built in Barcelona, 1929. It was a village; The Poble Espanyol (Spanish Village) is an open air area was assigned to represent life of Spanish people in various periods of time. It is an architectural museum which consists of 117 buildings, streets and squares to show a model of Spanish life. It has workshops, puppet shows and story time for children and also restaurant can be found in the region (Figure 2.16) (EXPO2000, n.d).



Figure 2.16: Poble Espanyol (Spanish Village), Barcelona, Spain, 1929 (Behostels, 2011)

The Paris World Fair of 1937 was officially dedicated to Art and Technology in Modern Life. There was an explosion of art, literature, music, and theater that may have been unrivaled in any period before. It was a critical period before war; the style of the buildings really changed. The power of dictators was growing, which

their brilliant architecture was on display there. Light alterations were done on the building but, not changing the whole. Some ideas such as lighting changes could be seen (Figure 2.17) (EXPO2000, 2000).



Figure 2.17: International exposition, Paris, France,1937 (Barker, 1999)

The New York world exhibition 1939 & 1940 was held in one of the biggest cities of the world. It had a definite aim; building the world of tomorrow. It shows the conflicting concepts; old/new, artificial/natural, historical/modern. Its symbol, “The egg and the Tack”-Trylon and Perisphere turned into the most popular landmark of the world after Eiffel Tower (Figure 2.18) (Nathaniel, 2012).



Figure 2.18: World Expo, New York, USA, 1939 (Cotter & Young, 2004)

In Brussels 1958, another world exposition was held called Atomium, with the emphasis on the peaceful use of atomic power. (Figure 2.19) The beginning of

electronic ages was with some structures like Philip Pavilion. It was presented by famous architect Le Corbusier, an acoustic building with a deconstructive idea. It was an effort in regard of impressing the general perception and therefore their everyday life (Figure 2.20) (Unesco, 1957).



Figure 2.19: Atomium, Brussels, Belgium, 1958 (De Noblet, 1993)



Figure 2.20: Philips pavilion, World Fair, Brussels, Belgium, 1958 (Naegele, 2003)

Recent years witnessed many exhibitions and fairs. The Seattle World Exhibition, 1962 and the New York World Exposition 1964, are two of them (Figure 2.21 & 2.22). After that, Montreal 1967, called Expo '67, was the largest world exhibition on the continent of America. Although it held on Montreal, it could attract the most visitors. Two islands, a precious structured exhibition area, which was designed with every detail, caught many people's eyes to visit the place. Its concept was shaped by light, space frames, tented roofs and glass. Housing was also one of the main aims of the exposition. It was held from April 28 to October 27, 1967. Sixty-one countries, including Canada, participated. The theme was "Man and His World." Fifty million people visited the exposition (Figure 2.23) (Thematic Guides, 2006).



Figure 2.21: Seattle World Exhibition, 1962, USA (Novak, 2008)



Figure 2.22: New York World Exhibition, 1964, USA (Cotter & Young, 2004)

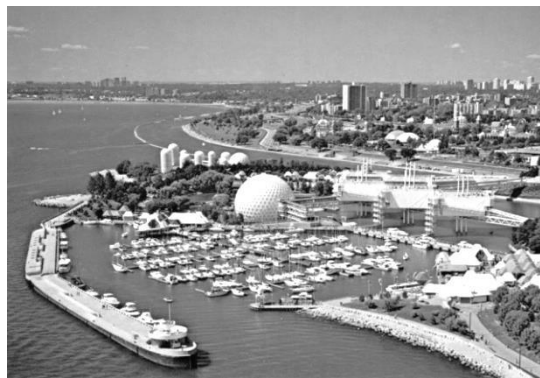


Figure 2.23: Expo '67, World Exposition in Montreal, Canada, 1967 (Stock, 2011)

Afterward, Osaka 1970 world exposition became successful and important. It was the first world exposition that had been held in Asia. The theme for the expo'70 was “Progress and Harmony for Mankind,” and the aim was to showcase the possibilities of modern technology to create a foundation for a high quality of life and peace throughout the world (Figure 2.24 & 2.25) (Therbert, 2011).



Figure 2.24: Osaka world expo, Japan,1970
(Hiroyuki, 2011)



Figure 2.25: Expo'70, Osaka, Japan
(Hiroyuki, 2011)

The Seville World Exposition 1992 was held to celebrate the anniversary of the discovery of America, as the one that had been held in 1929. Because of high costs, it was decided that some constructions should continue to be used as a part after the exhibition is over (Figure 2.26).



Figure 2.26: Seville World Exposition, Spain (Hiroyuki, 2011)

Expo 2000 was held in a huge space to celebrate the millennium in Hannover, Germany. The theme was “Humankind, Nature, and Technology” (Figure 2.27).



Figure 2.27: Expo 2000, Hannover, Germany (Krusi Lignamatic, n.d)

2.3 Types of Museum

Museums vary tremendously. Their diversity is in size, the exhibited objects or purpose. There are different kinds of museum assortment. There are classified by main characters of them. Most of the time, they are classified by the collections. More, as Ambrose & Paine (2006) claimed, there is a list of museums under the classification of objects that is written below:

- General museums
- Archaeology museums
- History museums
- Ethnography museums
- Natural history museums
- Science museum
- Geology museums
- Industrial museums
- Military museums
- Art museums

According to variety of museum types, the most common and integrated ones are going to be explained.

2.3.1 History Museums

History museums usually located in historical buildings and hold the national heritage of the city so people can place themselves in the early times. Most of these kinds of exhibitions and museums contain antiques, agricultural artifacts, documents and memorabilia related with the region which the museum is located in. some history museums have a library which gives the people an opportunity to use the historic books inside the library (Figure 2.28) (British Museum, n.d).

2.3.2 Natural history Museums

Natural history museum are museums which display ecosystems, gigantic creatures and natural life in diorama 3 dimensional. They need a huge building to be able to exhibit these huge artifacts (Figure 2.29).



Figure 2.28: History museum, British Museum, London, England (British Museum, n.d)



Figure 2.29: Natural History Museum, Paris, France (Paris digest , n.d)

2.3.3 Science Museums

Science museum are great for learning and experiencing. They provide an environment for both adults and children to learn and create their own perception

about the instruments. The main purpose of most scientific museums is to demonstrate the role and impact of technology and science in people's daily life (Figure 2.30).

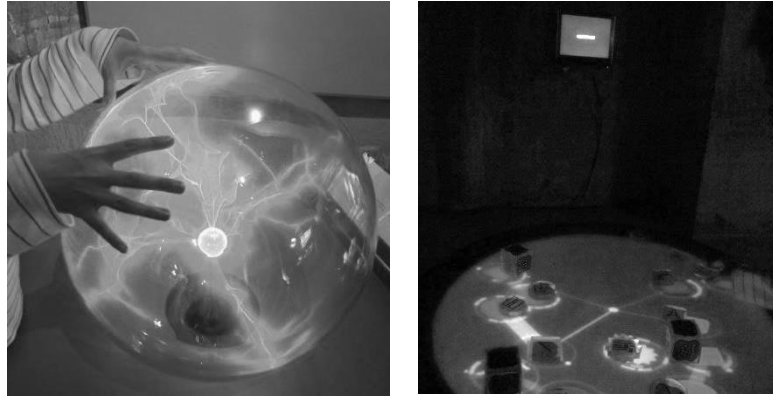


Figure 2.30: Santral Istanbul, Istanbul, Turkey (Author, 2012)

Brown Goode (1889), declared that “An efficient educational museum may be described as a collection of instructive labels, each illustrated by a well-selected specimen”(cited in Alexander, 1979, p.12).

2.3.4 Art Museums

Art museums are places where display art works by every artist such as local people, international artists and national. Typical art collections began with paintings, photographs, sculptures, drawings, and handcrafts. As time passes, the communication tools and educational opportunities are becoming more common in museums in order to make people more attracted in visiting the museum and make the most benefic of their visit. Audio guides, some short movies and also educational activities involve the visitors and let them explore the meanings by themselves. There should be confusion between art museums and art galleries. To be specific, art galleries are belonging to businessmen. It means that the art works that are exhibited in there are for sale. However, in art museums, there is a gift shop which sells art pieces, even related to the museum exhibited arts or other art works, but the

displayed art works in the museum are not for sale (Figure 2.31) (Types of Museums. ,2012).



Figure 2.31: The museum of modern arts, Wakayama, Japan (Graphic image studio Pty Ltd, 2001)

2.4 Types of Art Museum

After 20th century, artistic visions changed, and the art performance also changed because of that. Public interest went toward the way that art was more sensible and accessible for people. Nevertheless, art divided into several subcategories that were expanding with the passage of time. Art Museums, has the responsibility for all of these artistic categories to be a platform of making arts expressed their inner meaning. These categories of art museums are explained below;

2.4.1 Painting, Drawing and Sculpture

Painting, drawing and sculpture, are among the first art types that were presented in Museums. They are well-known artist's artworks, whether the artist is alive or not. Workshops hold for people who are interested in arts often in art Museums (Figure 2.32& 2.33).



Figure 2.32: Vangogh Paintings, Philadelphia art Museum, USA (McClellan, 2004)



Figure 2.33: African art, Neuberger art museum, New York, USA (McClellan, 2004)

2.4.2 Photography

Photography is among those arts that are not very old, and it started to grow after the invention of the camera. It can be described as 'looking at the world from photographer's viewpoint'. It is a broad category. Bunnell, (2006) stated that, photography's world evolved quickly during 1970s. Exhibitions, more information about the history of photography and importance of photos in all aspect of life, made people more interested in photography.

Some of the reasons of exhibiting photographs are making the photo being seen, to get feedback about them; it is a form of practice for artist and helps him be more successful in his career (Figure 2.34) (Read, 2008).



Figure 2.34: Installation of photographs, National portrait gallery, London (Read, 2008)

2.4.3 Media Arts

Another form of art that is seen in art museums and galleries is *media art*. New forms of art are created with videos. Artists try to communicate with contacts by clips, films and cameras and the computer is used as a tool to help them express their art in the best way possible (Figure 2.35).



Figure 2.35: Media art (video art), Salt Gallery, Istanbul, Turkey (Author, 2011)

2.4.4 Installation Arts

Installation art is one of the other new forms of performing art beside fields such as sculpture and architecture to create a dynamic art form. In this type, the objective is to the environment and some objects that are installed inside of a space. Artists try to

involve the person with the space; room and its objects will be a work of art. Media art and installation art are combined in some situations (Figure 2.36).



Figure 2.36: Installation art (Art Media Types, 2011)

2.4.5 Performance Arts

Performance art is a form of art that an individual is taking an action in a place for a variety of audiences. It is a form of art that utilizes the people instead of sculptures; people can walk, talk and express feelings and have a greater impact on people. Therefore, it is a dynamic and active art. It can be performed anywhere and some time, and it acts as a medium to express the political and social thoughts of society. The main characteristic of this kind of art is the body. Others are time, space and relationship between audiences and performer (Coogan. etal, 2011). It also tries to merge the meaning of art and life with each other to create an idealistic form of art that is more in touch with people (Figure 2.37& 2.38).

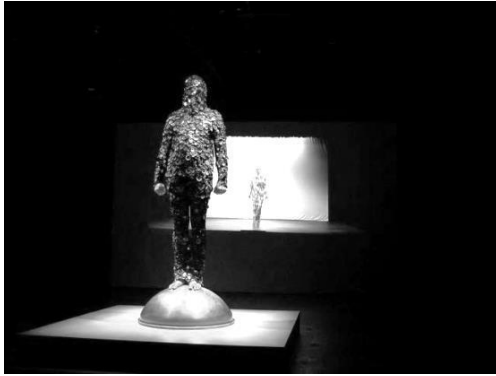


Figure 2.37: David Cunningham Projects at New Langton Arts theater: Austin McQuinn, more info is available in the website (Bamberger, 2007)



Figure 2.38: Tilda Swinton's Live Performance Art of Sleeping in a Box At MoMA (Blazenhoff , 2013)

2.4.6 Contemporary Arts

As human become more accustomed with the environment, feeling of talking to artworks in different ways gets more sensible. A person can even create or redefine its meaning. The first and most feeling that the contemporary art share with people is 'it belongs to our time'. Even if the artwork is created by a person with different gender, religion, age or culture, the sense of synchronization is obvious. In other words, it defines that we are all in the same time, no matter how different we are. This is the main obligation of contemporary art. Contemporary art is the work of artists who live in the same era with us. It makes people rethink or share their idea about the artwork without any boundaries and styles. It reflects different range of materials, activities, technologies and unconventional methods. It has a wide and limitless range that gets broaden every day. New technologies such as digital media, computers, and internet are used to create contemporary arts. Some kinds of contemporary art's types are graphic design, animation, digital art (any type of art that is made with a computer. Vector drawing, digital photo and painting, 3D modeling, web site design, animation and games can be defined as different kinds of digital art, video installation (the art of combining installation art and video

technology in order to have better influences on the audiences), and body art (one of the earliest forms of art to show the religious status, ritual ceremonies and protecting against evil and diseases. But today, it is used for different reasons such as personal expressions or decorating the body). They can even be exhibited outside the museum space (Figure. 2.39- 2.42) (Smith, 2011) (Art21, Inc, 2013).



Figure 2.39: Balloon dog, museum of contemporary Arts, Chicago (Keay, n.d)



Figure 2.40: Digital art photography by Miki Takahashi (Takahashi, 2012)



Figure 2.41: Body art by Billy Edge (Edge, n.d)



Figure 2.42: Video installation art, Vantaa Art Museum, Helsinki, Finland, 2003 (Biggs, 2009)

2.5 Summary of the Chapter

In this chapter, first the concept of museum was defined and the origin of the museum was explained broadly. After that, different types of museums, especially contemporary art museums were discussed completely. Based on the information

given above about the Museum's origins and their diversity due to the location, culture, region and type, interior design, which is one of the important factors that have effective role on the museum, interior design characteristics of them going to be explained.

Chapter3

DESIGN OF THE MUSEUM BUILDINGS

3.1 General Design Issues of Museum Buildings

Museums, as nonprofit cultural institutions, have a significant role in people's perception. Their task is to improve social wisdom and eager them to learn about everything that museums are exhibiting, from scientific cases to historical artifacts. In response to the question about the reason of visiting museums, some notions are written following; museums can make user feel better and help him gets more knowledgeable. It provides an impressive learning environment with variety of information. In other words, it is like a community center. People meet each other, discuss occasionally and benefit from other user's opinion about the museum. Perception varies for each individual. Some visitors are inspired by the content of the museum and use them in their career or life (Dilenschneider, 2009).

There are some general considerations in designing a museum that should be thought over during the design planning. Museums are recognized by their way of organizing. They may be *object-centered*, which exhibited objects or artworks are the center of concentration, *narrative*, which presents a story. Bedford (2001) noted that 'Stories are the most fundamental way we learn. They have a beginning, middle, and an end, and *user-centered*, which visitors and their choices are the main aim in design process (Kelly, 2010).

Another consideration is the location. It means, the area which the museum is located is important. Is it in the center of the city or in suburbs? It may be in within a park, in a busy street or a walking street that cars traffic is not allowed. Public transport is a noticeable point; People around the world, travel different countries and visit main attractions of the visited place. Museums are one of the sights of each country and those, which are located near public transport vehicles, are more accessible and preferred for people to visit (Johanson & Olsen, 2010).

More, with considering the place of the museum, another noticeable and momentous factor is the audiences. Each museum, according to its collections, has its specific group of users. There are different tastes among people in the world and each person has his own choice of visiting a museum. Therefore, being aware of who are the main and primary visitors is prominent. After that, there should be embedded some rest areas for users that they can use during their visit in case of their need. Also, other facilities such as rest room, cafeteria and gift shop should be available in the most visible place in the museum (Lila Wallace-Reader's Digest, n.d).

3.2 Museum Buildings

There are two main approaches toward the Museum building. The museums that were basically designed and built as Museum buildings, and the ones, that are converted into a Museum building. In other word, the use of the building is changed and re-used as museum building. It is better to consider the museum buildings approach in design process. There are some differences in facilities and sort. Continuously, they are going to be explained.

3.2.1 Buildings Originally Designed as Museums

Constructing and designing a building for a specific purpose is common issue. It is more facile for designers and engineers to think about the structure, materials, facilities and design elements of the building. Museum is one of the important building types, which needs specific multi-disciplinary process. A group of designers think about the type of museum before designing it. There are many significant examples of buildings that are originally designed as a Museum. Some of them are prominent by the design of their own buildings. They are also known by their design not only the exhibited works.

Guggenheim Museum Bilbao is Contemporary and Modern Art Museum and one of the most famous Museums in the world. It is designed by Frank Gehry and located in Bilbao, Spain. The most important reputation is its unusual structure, material, free form sheets and abstract view that became Frank Gehry's architecture characteristic (Guggenheim Museum Bilbao, n.d). It is a complex of steel, stone, glass and titanium and some of the exhibition spaces are covered with cement (Figure 3.1).



Figure 3.1: Guggenheim Museum, Bilbao, Spain (LeCuyer, 2003)

3.2.2 Museum Buildings Adapted to Museum

Nowadays, decreasing the resources and increasing the human demands, lead toward utilizing the old, useless constructions again. In other word, buildings have undergone some alterations to be able to be efficient. '*Adaptive reused*' is defined as the act of any possible changes on an old existing building, to redesign it for new function while retaining its historic existing specifications. A diversity of repairs or changes to an extent building, permit it to serve Contemporary uses while keeping characteristics of the past (Bookout & Urban Land Institute, 1990). Such an activity is done due to excess the building efficiency and its useful life. Also, the process is done to satisfy the clients or users. Adaptive reused is for eliminate the obsolescence of the structure and make the most benefit from it through a new function (Douglas, 2006).

An adaptation process is like a metamorphosis. An old and useless structure is going to be changed for a new purpose. There are alterations in the whole building, but it is just the characteristic of the old building, which is remained untouched.

In adaptive-reused projects, there are some criteria that should be considered. The first factor in adaptation is to assigning a new function in to the building by saving the historic characteristics of it. In other word, shifts should be as less as possible to avoid the manipulations. Deteriorated part is better to be repaired rather than removed. When there is a necessity to replace, the new feature must match the older one in all the ways possible. Using materials that may destroy the original one should be avoided and in case of extension. Also, the old part of the building should not be damaged or changed (Craven, 2013).

There are some reasons for adaptation a building for a new function; economic problems in last 30 years, force companies and owners to decrease the costs of constructing new buildings and use their property for investment. After that, the world is becoming like a global village. Better communication and transportation make people be more aware of their demands. Nevertheless, companies and owners are encouraged to improve the quality of their property as well as their products. As the space qualities improve, the values of the properties are getting higher. Beside these factors, the user's satisfactions get higher. When their requirements and expectations are met, the work level in working hours improves. Suitable work place, especially offices, prevents sicknesses such as sick building syndrome (SBS) and building-related illness (BRI) (Douglas, 2006).

Many different types of uses can be excreted on the construction such as residential home, office, museum and exhibition. When the adaptation is aimed to prepare the building for museum or exhibition function, the complexity is getting higher. The main property of the museum is its collections. They may be artifacts, historical items or artworks. However, the key point is that, collections carry their own

meaning and their role is to express it. Hence, there are complex correlation between the adaptation of the building for the museum function and the adaptation of the collections to the museum space (Doumbas, 1990).

Santral Istanbul is one of the good examples of adaptive reused projects. Before its regeneration, it was used as the power station in Ottoman Period. It was the oldest industrial area in Istanbul and supplied the electricity for the city until 1983. It is one of the most significant art and cultural project in Turkey. After conversion, it became the Museum of Energy, which contained the original staffs from power plants, galleries, exhibitions and gift shop (Figure 3.2) (Santral Istanbul, n.d).



Figure 3.2: Santral Istanbul, Turkey (Author,2012)

While mentioning the general issues of the museum building, they should be expanded to the inside of the museum. Interior space has the main impact on the

people and their idea after leaving the space. Interior factors are explained consequently.

3.3 Interior Design Aspects of Museum Buildings

Interior design has the fundamental part of each museum. The main impression is based on the organization of interior environment. People visit museums due to different reasons. Their post-visit reaction is important. It can encourage them to re-visit or it may make them transfer their negative idea to others. Museum area should be designed in a way that leaves a good perception in users' mind. There are some considerations that help the interior design of museum space perceived efficiently.

Collections are the main objects in a museum building. Thus, the aim was just to present the exhibited objects to people. However, nowadays, space and objects are making exhibition area together. Space may be utilized to increase the impact of collections, objects may help the environment to be more effective, or in some cases, they keep their own autonomy (Tzortzi, 2007).

A successful museum design, influence the visitors in their first sight. First impact and concept of the museum can be a great success. A good design can give a positive feeling to users that make them communicate in a better way with collections and the space.

Additionally, the objective should be *creating a meaning*. Everything is based firstly on organization. Also, users need to access and circulate In the museum easily during their visit.

Based on the general information that is given above about the museum, the most influential interior design factors for a museum building are going to be explained.

3.3.1 Functional Arrangement, Circulation and Accessibility

As long as museums started being known as cultural places for people, their social role became prominent. Their function was to attract visitors to display exhibited objects and this role is still the same. Placement of the artworks and objects in museums should be in the way that visitors could be able to visit all of them and receive the most information that the exhibition contains. Accordingly, museums must be planned to help that the message of the artwork being delivered in the best way possible.

Museum planning is the act of create a description of new museum and its aims. The objective is to make a concise, brief and clear design plan for the new museum and its long term efficient and sustainable use (Museum planning, 2013).

There are some steps in visiting a museum. Once the visitors arrive, decision should be made, whether they want to visit the museum, or does it worth to pay the fee or not. Therefore, there should be a lobby before entering the museum (Bitgood & Lankford, 1995). These spaces are crowded and commonly, in a lobby area, there is a souvenir shop which contains some artistic works and some related objects with the museum or current exhibition. In addition, there are toilets, locker room and in bigger lobbies, cafés and restaurants can be found (Figure 3.3).



Figure 3.3: Gathering hall, Van Gogh Alive exhibition, Istanbul, Turkey (Author, 2012)

After buying the ticket and deciding to visit the museum, visitors are faced with a new place. There should be a guide map, which contain the interior plan, name of the galleries, and other facilities that are needed during a visit, to help people find their way inside the museum or exhibition area (Figure 3.4). According to the defined organization that has been done before opening, there are different circulation layouts in a museum. The way, that design and the layout define a set of rules for visitors' circulation, may specify the pattern in which the visitors interact with objects (Kaynar, 2005).

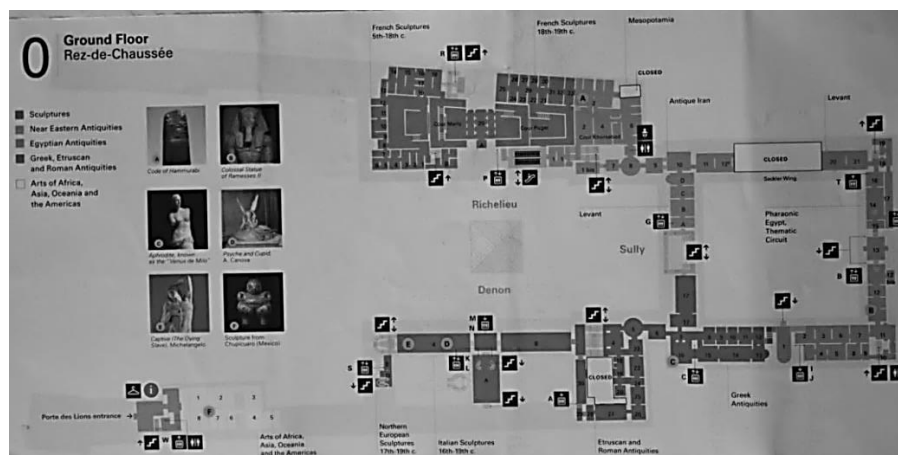


Figure 3.4: Guide map, Louvre Museum, Paris, France (Author, 2013)

An interior museum area is specified with its circulation space. Some reflects the well-known idea of '*form follows function*', that visitors should follow specified accessible paths through their visit from the beginning to the end. They have got few alternative choices to pick. This system can also be called in different names such as '*restricted circulation*' and '*way finding*'. One of the advantages of this organization is nobody gets lost or confused, because everything is determined in its situation along this path, so people can spend most of their time on seeing and understanding the artworks instead of finding them (Figure 3.5) (Kaynar, 2005)



Figure 3.5: Circulation paths, spiral interior plan, Guggenheim Museum, New York, USA (Travor, 2013)

There are some identified paths known as *itineraries*. Itineraries are road connection between the entrances and exits and construct the movements (Fig 3.6 & Fig 3.7).

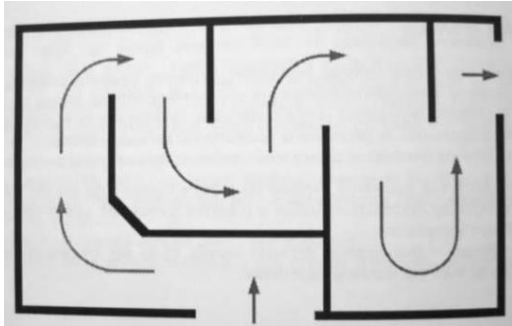


Figure 3.6: Directed approach, one accessible path (Madran,2012)

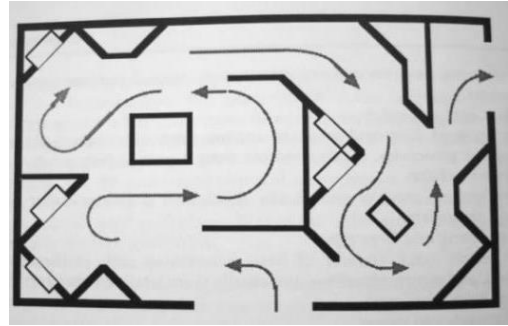


Figure 3.7: Suggested approach two ways but it leads the eyes to one of them (Madran,2012)

Another type of circulation is using the meaning of ‘*Transparency*’. Galleries are divided with partitions to give the feeling of separation, but indeed they are not apart from each other. This can also be known as ‘*open plan organization*’. In this type, according to existing different and changeable circulation ways, visitors have a choice of choosing the routes individually. This can cause variety of experiences by each person who has visited the museum and subsequently, encountering with both the spatial layout and exhibited items are in the same level of importance. The visual continuity helps to receive message of the exhibited works easier. Each person may face each object more than one time; it can help it to be perceived better and reduce the probability of ‘*fatigue*’, which is human unconscious reaction in face of tiredness (Figure 3.8 & 3.9).

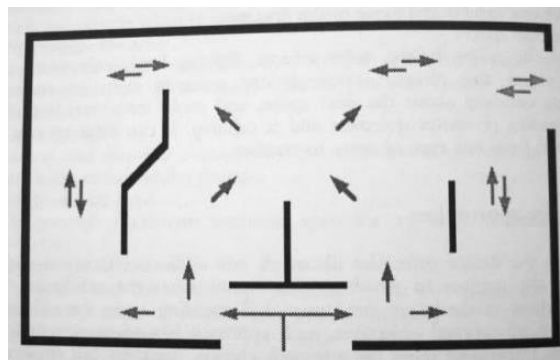


Figure 3.8: unstructured approach, path is depends on the visitor's choice (Madran, 2012)



Figure 3.9: Open plan organization, Gippsland Art Gallery, Victoria, Australia
(Graphic image studio Pty Ltd, 2001)

During the visit, visitors should be able to find the routes easily. Boards and guiding signs should be located in a place where people could see them without any barrier. They shouldn't be covered by anything; they have to be installed so that nothing shelters them. The chosen font, size and color for the text should be chosen properly and they have to be unaltered during the museum galleries. One of the common confusions is finding the way out. Circulation should be planned in order to lead the visitors from entrances to the exits or there should be guiding signs to help them find their way through galleries. So the location of exit signs have significant role in museums (Figure 3.10).

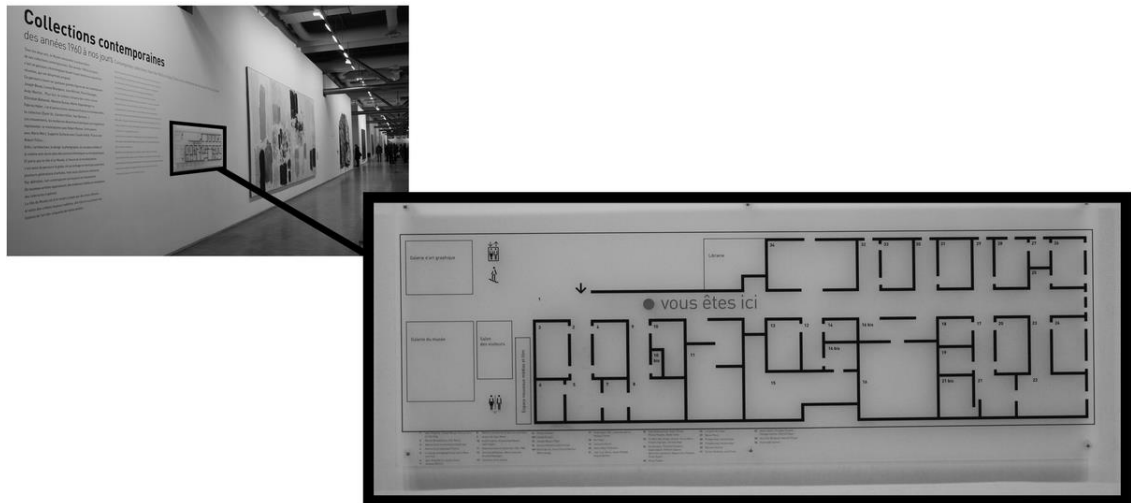


Figure 3.10: 'WE ARE HERE', Interior guiding map about the current situation, Pompidou Art Center, Paris, France (Author, 2013)

3.3.2 Color

Objects transform the lights. They can be seen when they reflect light to the human eye. Pigments in the objects sometimes reflect different wavelengths, sometimes transmit them. Those reflections are perceived by our eyes as colors (Figure 3.11) (Madran, 2012).

Color world refers to human sensation. Designers give codes by using variety of colors. Color differences or 'intonation' makes a kind of hierarchy and lead the human brain. The philosophy of color is not making human happy. However, it exists to help man being more adapted with his environment (Bierren, 1988).

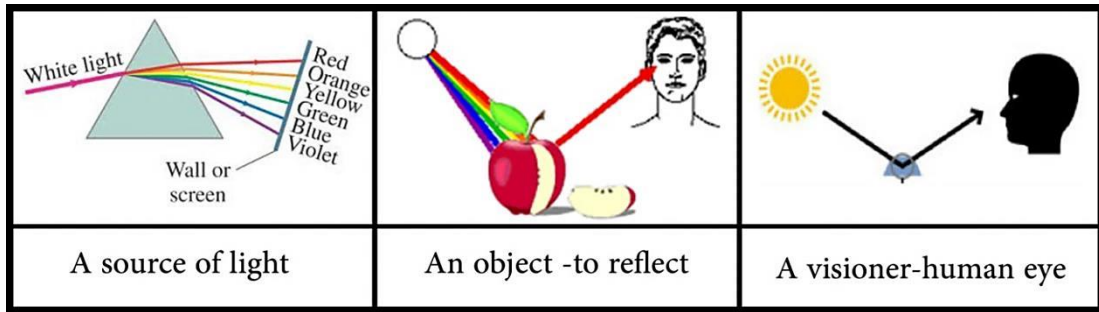


Figure 3.11: What is needed for light to be seen? (Kovalik & King, n.d)

Each color has a meaning and it changes due to the situation. In museums, exhibitions and galleries, using colors are to strengthen the meaning of the exhibits and sometimes the building itself. Effect of them should be analyzed within the considered environment. Actually, coloring up the walls are to give the visitors some codes and cues about the space that they are in. Seeing and perceiving colors are directly in relation with the light intensity. It is light which makes colors perceived differently in each situation. Illumination has the power to change every aspect of the world; it creates or even destroys the space.

The dominant colors in exhibition and museums in 20th century became white and light gray (Fig 3.12). Before that, using strong darker color was common. Choosing colors depends on the exhibits and the artist's preference. There is not a published rule for painting the walls in a museum or exhibition area. Big art galleries, have used darker backgrounds for historical artworks (Fig 3.13).



Figure 3.12: Using light colors for coloring up the walls, Museum of Modern Art, Wakayama, Japan (Graphic image studio Pty Ltd, 2001)



Figure 3.13: Using darker color for historical artworks, Michael C. Carlos Museum, Amory University, Atlanta, USA, (Graphic image studio Pty Ltd, 2001)

Metamerism means color value changes under different lighting conditions. Their meaning and characteristic may alter with various kind of light. For instance, Incandescent and halogen lights increase the influence of yellow and red colors and neutralize green and blue colors. A fluorescent light is completely vice versa. Blues and greens are enhanced and yellows and reds are muted (Figure 3.14) (Barnett, 2010).

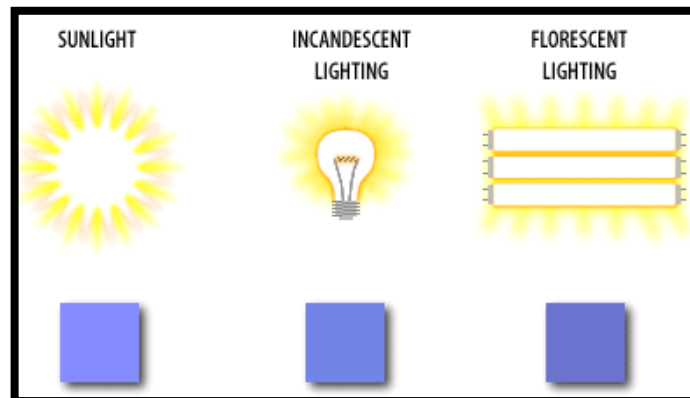


Figure 3.14: Value of colors changes under different lighting conditions which is called metamerism, (Technical Guides, 2000)

Wall's color of the exhibitions and museum has a great effect on the understanding about both place and artworks. Generally, the overall visitor's mood is affected by light and color of the gallery. As color intensity gets higher, the environment

becomes more alive and understandable. While darker environment feels more formal and serious. Sometimes, color is used to separate two halls or draw attention on a specific subject (Fig 3.15). The best choice for lightening an interior space is natural light. Paint colors are even more realistic in this situation than being under artificial lights. They can expose their nature better because they had been painted under natural light. Natural sunlight gives a neutral harmony between cool and warm spectrums. Two rooms with the exactly same color in different sides of the building- northern and southern part- have distinct look according to their location and the emitted light. Moreover, intensity of light changes during the day and causes color difference.



Figure 3.15: Color differences between colors of the walls, Amon Carter Museum, Texas, USA (Tilden, 2004)

3.3.1 Light

The history of light and architecture go parallel to each other. Since human started to differentiate day and night by opening the windows, the struggle for letting the natural sources in through windows started to be an important part of the lives.

Firstly, light is what enables everything being seen. Without light everything is dark and meaningless. Our perception about a space is directly affected by light. It sets boundaries, make a place feel smaller or bigger, and also it separates areas from each other. Light has a great role in people's way of thinking and perceiving. It can also completely change or even control the feelings in addition to the design of the building.

Each environment has its own characteristics and has its special effect on individuals. The very first glimpse has the most effect on visitor. As Halonen, (2010) expressed, learning is directly related to the visual process in human, brain that is happened unconsciously. Lamination is one of the factors that can induce the right phase or it can transmit unpleasant feelings to the spectator.

As the designer, Tadao Ando, expressed his idea, basically, it is light that makes materials alive and shapes the form of a room. (Fördergemeinschaft Gutes Licht, 2000).

As Tadao Ando expressed above, light plays a significant role in a place especially in museums which exhibit important collections.

Each place needs its specific way of lighting design. As it is stated in '*Guide book on energy efficient electric lighting for buildings, Aalto University, 2010*', there are different types of spaces that should be classified before designing according to their objective;

a. Spaces designed for work and services to the public: places where the functionality is the key element guiding the work of the designer, and the main aspects to satisfy are the rules of the vision and ergonomics, the safety and the communication.

b. Spaces designed for exhibitions and sale: places where the most important need is the image be it faithful to the truth or distant to the reality, virtual, fascinating.

c. Spaces designed for residence and tourism: places where light should satisfy the need for comfort, relaxation, aesthetical value, status symbol.

Lighting issue is very special for the exhibition and museum spaces. This is important on the perception of the space, displays and art works and the combination of all of them. The focus of this study is on museum and exhibition spaces. At the beginning, the most considered case was the exhibited work. But now days, the building is considered as a part in exhibiting process. It means that, the whole architectural elements, both inside and outside of the building are considered as the art works and has their role in visitor's last comment about their visit. As can be seen, designing a museum space has gone further than showing artworks. Lighting is one of the most effective elements in architecture. Now, it is more than just setting some illumination facilities. Furthermore, it should be mentioned more detailed.

3.3.1.1 Lighting types

There are two kinds of light sources that are mostly used in museum buildings.

➤ **Daylight**

Daylight is the most important illumination source in museums. Nowadays, by increasing the debates about saving energies and sustainable designs, sun light, as a natural light, becomes more noticeable. Although direct sunlight has its vulnerable effects on art works and it should be controlled completely in order to gain its benefit in illuminating the interior space.

As it is stated in the book 'light is the Theme, 2011' by Louis Kahn, using natural light is a kind of invention. Artificial light is an inert light; while natural light is depend on the condition.

Sunlight should always be locked out because UV exposure causes many irrecoverable effects such as discoloring the paintings, making pictures fading and deformation. Daylight can be admitted inside the museum building by different alternatives. Side lighting, top lighting, using reflectors like clerestories and light shelves, (Figure, 3.16- 3.18) (Hancock, Hinchliff, Hohmann, 2009, P.5).

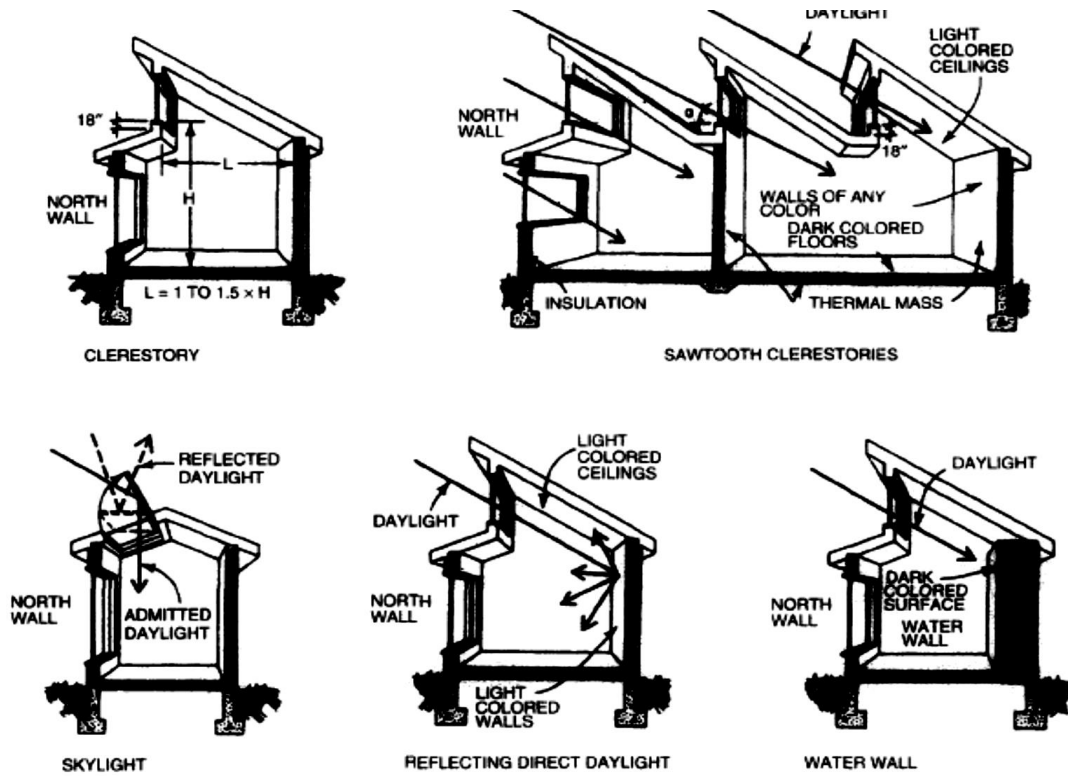


Figure 3.16: Alternatives for admitting daylight into museum space (Hancock. et al, 2009)



Figure 3.17: Innovative clerestory window day lighting, The Menil Museum, Houston, USA (Tilden, 2004)

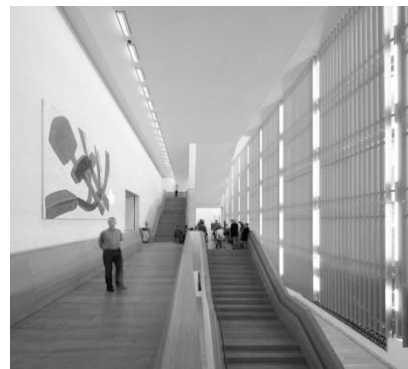


Figure 3.18: Filtered side light from windows, Brandhorst Museum, Munich, Germany (Brandhorst Museum, 2010)

➤ Artificial lighting

Lighting sources has been changed and improved during time. Factors such as economic issues and importance of saving energies lead the lighting industry to produce more sustainable and longed-life lighting fixtures. Subsequently, variety of

lighting instrument is going to be mentioned and the most widely used sources, which are LEDs and Fiber Optics, are going to be explained;







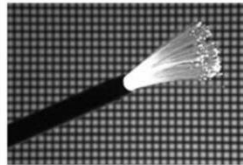

			
Incandescent lamps	Tubular fluorescent	Compact fluorescent	Halogene lamp
			
Metal discharged halogene	LED (Light Emitting Diode)	Fiber optic	OLED (Organic LED)

Figure 3.19: Different lighting instruments (Madran, 2012)

LED, which is the abbreviation for Light Emitting Diode, is a common type of light that is used recently in a wide range in industries. It emits light more that reflect it and it is one of the reasons that made it become popular. They need less electricity to illuminate in comparison with incandescent lamps and also, it emits the light directionally. So, it is useful device for saving energy because it wastes less energy to be illuminated. It has a longer life than incandescent lamps, but it is more expensive than last lighting technologies. LEDs are more preferred in museums and exhibition lighting design; it can have very small size and different shapes (Figure 3.20-3.22).

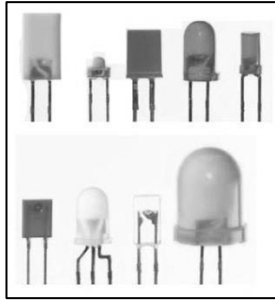


Figure 3.20: different sizes of LED (Peddinti, n.d)



Figure 3.21: different types of LED (Karlen & Benya,2004)



Figure 3.22: example of using LED in Berne Art Museum, Switzerland (ERCO, n.d)

Fiber Optic is a transparent thin fiber which transmits light between its two ends. It emits lower UV and heat amount. Fiber optic and LED are similar in quality. However they differ in taking electricity; LED takes the electricity directly inside of the diode but fiber optic takes it outside. This can reduce the probability of touching the fiber. It can be easily hidden and it can be located in problematic places which are not accessible points (Figure 3.23 & 3.24).



Figure 3.23: Fiber Optic light wires (Beazley,1999)



Figure 3.24: Example of using fiber optic light in display case in a museum (Universal fiber optics, 2011)

3.3.1.2 Adaption of light Resources

Direction, size and location of the light source can make different perspective from the objects which are in dealing with that light. It can make a room feel bigger or

smaller, darker or lighter. Having the knowledge of how to use it in a perfect and sufficient way is substantial (Figure 3.25).

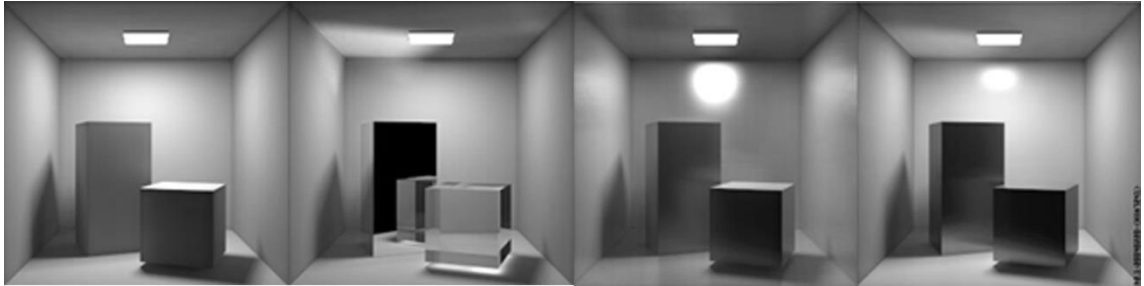


Figure 3.25: Directions of the light and its effect on the objects (Madran, 2012)

There are varieties of lighting instruments that are used in museums to show the exhibited works or lightening the space for a specific purpose. In following, most common luminaires are going to be mentioned:

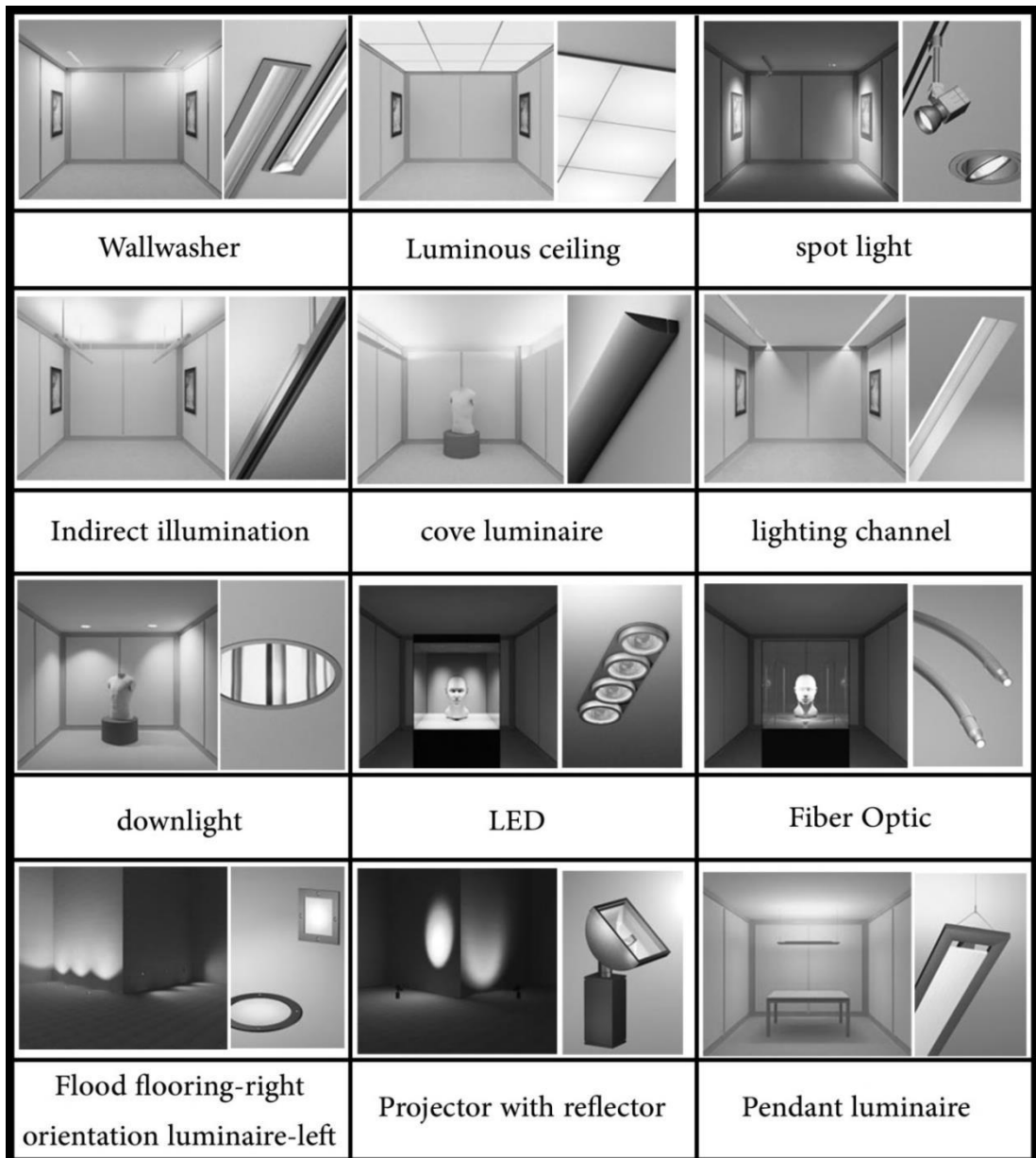


Figure 3.26: Different types of luminaires in interior space (Fordergemeinschaft Gutes Licht. N.d)

3.3.4 Finishing Material

As time passes, new materials make the choice of material wider and at the same time, make it somehow complicated. Designer must be dominant on the material's performance and their characteristics due to many different aspects. Museums, as the focus of this study and as social and multi-cultural place, must be designed with proper materials that are compatible with the region of its construction and the

collection's origin; although some deconstructive samples have been constructed. To be more aware of the materials in different times, first essential and more functional ones are going to be explained and then, ones that are used in museum spaces are going to be written and explained with accurate examples.

The origin of material is conjunct with the history of construction. They had been used through human being history. The very first men were used to apply the resources around them to make their dwellings. Hence, it is the content that is changing, not the quiddity of the term 'material'. As Van Eyck declared, " it can't have been very different in 5000 years ago; the same laboriously fashioned bricks, the same spaces around a courtyard, the same enclosure, the same sudden transition from light into darkness; the same coolness after heat (Weston, 2003)". The first houses according to Vitruvius, the Roman architect, were made by straws. *Clay, mud, uncut rocks, stones and wood* were all the early materials for construction. By improving the technology, attempt to invent new materials increased. Civilized society needed more advanced materials to build its buildings. Therefore, something like *cement* and *concrete* has been produced. Concrete is hard in dry mood but it needed reinforcement in case of moisture. Then it come new alloys that were more resistant to corrosion. *Plastics* are modern substances that have many advantages; they can easily be shaped, cheaper in cost and lower in weight and they are applicable in interior design aspects. *Glass* is another advantageous material that has been widely used since its invention because of its transparency and aesthetic aspects in both exterior and interior of a building. Another available one is composite that is a mixture of different kind of substances. It has some superiority in comparison with priority materials that are strength, persistence and its lower weight (Mavvis, 2008).

These days ‘green design’ is in process and occupied the most range of designs to it. Green building design and materials are along the target of sustainable architecture and it is the important reason of its victory. Being nature-friendly make it healthier and more durable and as most of green materials can be found in nature and economy can be added into the list of its privileges.

Material in a Museum space is one of the factors that should be as adapted as possible in order to collections preservation, user’s convenience and future durability of the whole Museum complex. It should help the building to be more protected against the environmental influences according to the location and weather conditions for a longer time. Floor covering has the most important role in this field. It should be chosen in a way that reduces the indoor pollution and humidity. Some of the materials that are mostly used for floor covering recently are: *commercial carpets*. The most obvious advantage of these carpets is reducing the sound pollution which is caused by walking. They are good choices in temporary exhibitions and museums which have many visitors during the day. Having nylon as a component makes them resistant to chemicals and UV exposure (Fig 3.27) (National park service, 2001)



Figure 3.27: Using carpet in a temporary exhibition, National Museum of wildlife art, Jackson, USA (Graphic image studio Pty Ltd, 2001)

PVC (polyvinyl chloride) is a plastic material that is used today in buildings. It needs low maintenance, it is resistance to water and moisture, easy-cleaned, low cost and it has variety of colors and qualities. However, in case of fire, its performance is very low and it decreases the safety in a museum space. Also, as time passed, the risk of using *PVC* got more visible. *PVC* has some particulates that can cause lung cancer. There are some alternatives available instead of *PVC*, which the most used one is *linoleum* that is a natural made material. By having many similarities with *PVC* like the acoustic feature, it is durable natural flooring, fire-resistant and soft (Figure 3.28) (Woolley, et al, 1998).



Figure 3.28: Linoleum flooring, Milwaukee Museum, USA (Tilden, 2004)

Other alternatives are stone and parquet flooring. These are green products that take the most expensive place in the flooring industry. Stone is a highly durable material but it cannot be renewed. Parquet is manufactured from recyclable resources. It can be made from hardwoods timbers, but it is not planned to be sustainable for a long time (Fig 3.29) (Woolley. et al, 1998).



Figure 3.29: Using stone (left) and parquet (right) in Museum space (Tilden, 2004)

Linoleum can be named as the greenest product. Each of these materials has advantages and disadvantages. They have been compared due to some environmental factors (Figure 3.30) (Woolley. et al, 1998).

	£	Production					Use			
		Unit Price Multiplier	Energy Use	Resource Depletion (bio)	Resource Depletion (non-bio)	Global Warming	Toxics	Durability/Maintenance	Recycling/Reuse/Disposal	Health
Smooth Floorcoverings										
PVC/Vinyl	0.6	●		●	●	●		●	●	●
Linoleum	0.6	*		*						
Wood/Parquet	1-2.4	*	●						*	
Stone	8.1	*		●					*	

Figure 3.30: Floor coverings comparison due to their contaminants and features (Woolley. et al, 1998)

As the world goes towards sustainability, durable and green materials have been widely considered. Recycling or reusing current materials is one of the ways toward sustainability. One of these materials is concrete. Lately, adaptive reused of old buildings is a sticky topic among construction specialists and architects. Industrial, abandoned sites are more in sight. Most of their floors are covered with concrete

because of hard and pressure resistant characteristic of it. *Stained concrete* is the polished form of rough concrete in industrial building. It is a green material; current material is being reused and less manpower and maintenance is needed. Besides, it has brilliant features; it is acid-stained, needs low maintenance, easily cleaned, non-slippery, decreases the dust amount and allergy, not easily scratched, longed-life and improves natural light (reflective). Moreover, it is no longer grey; there are variety of colors and patterns available. It is a good replacement for carpets, it can be easily changed and anything can be placed on it, so it improves the integrity of design (Modern Crete Concrete Design, 2013).

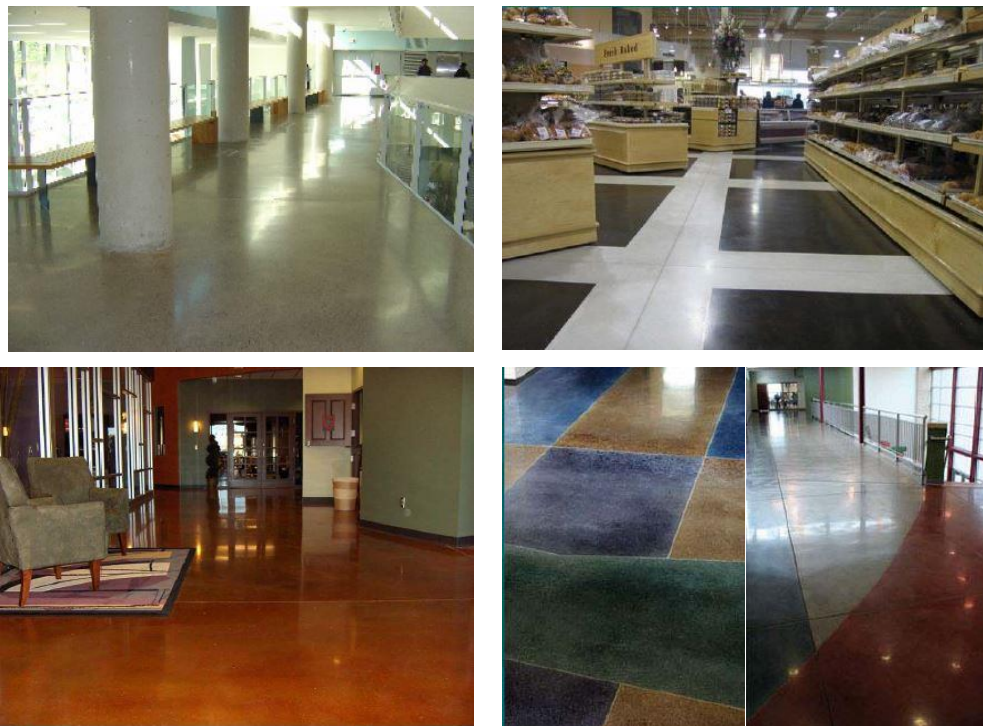


Figure 3.31: Concrete flooring (Concrete floor contractors association (CFCA), n.d)

Wall and ceiling covering are another context in furnishing. They may differ by the museum type, is it an art Museum, science Museum, history Museum, or other types? Or is it originally designed as museum or an adaptive reused type Museum? By being predominated over these factors, more material choices will be available for

designing. It is written in International Code Council (2010) that surfaces in the museum space such as partitions, columns, panels, ceiling and other finishes are for decoration, acoustic purposes, insulation and fire resistant system.

Plaster and *drywalls* were common during 1960s and now, it is still used in construction industry. They are inexpensive materials that are easily applicable and stable and they have good fire-resistance. Also they are made to assign on permanent and fixed walls (Friedman, 2013). Another type of covering walls and ceiling is *paneling*. Panel is a piece of material that can be assigned on the walls and ceilings. It can be made of veneered particle board, veneered plywood, solid wood, and PVC and fiber glass. Wood panels are natural materials and they were common before, but with the creation of other choices, using them is not too widespread. Reasons such as the high cost, low fire safety, high weight, limited color and shape choices let wood give its place to materials like PVC and fiber glass; although it doesn't mean that wood is not used at all. PVC and fiber glass panels are the replacements for wallpapers and wood; they are resistance against moisture, mold and mildew, thermal resistant, more fire-resistant than wood and paper, able to reduce the noise, low weight, and can be assigned on the drywall ceilings. They have different color and shape choices and can be removed easily for changing purposes (Figure 3.32) (Room finishing system, 2007).



Figure 3.32: Different usage of panels in buildings (wall system design guide, 2009)

Another considerable subject in this field that has substantial role in museums is *display case* material. The greatest part of museum property consists of objects that are displayed in display cases. Choosing proper material for case is vital because of its direct impact on the artifact or object that is located inside of it in order to minimize the risk of damages on artifacts. Some artifacts are kept in cases for a long time. Volatile gases can cause damage on artifacts. Also, corrosion, discoloration, tackiness and dust are some of the other damages that can be happened to objects. Polyethylene sheets and acid-free tissues are safe materials that can be used inside of the case, on the other side, PVC and acidic cardboards are not recommended (Tétreault, 1994). *Acrylic glass* or *Plexiglas* for vitrines, with at least 10mm thickness is commonly used for objects that have low or medium risk of being theft, because of its low shatter resistance. In case of high risk, *laminated glass* can be specified with higher level of protection like bullet resistance. Laminate has different protection levels;

Security laminates are safe materials to use, but they would be expensive. Some cases are constructed with wood in order to keep valuable objects; they have to be reinforced with metal to increase the safety (The Council for Museums, 2003).



Figure 3.33: Display cases (Display case types, 2013)

3.3.5 Exhibition Units and Furniture

Showcase or display unit is a type of furniture that is designed to hold objects and exhibit them. It has two sections. The lower side is the base of the case. It is mostly made by glass or steel. The upper side is where objects are located. It is mostly made of acrylic glass, Plexiglas or laminated glass. In some cases, the upper section is appeared without glass. It happens in case of non-delicate objects. The safety range of the upper side material is differs due to the importance of objects that is inside the display case. There are varieties of showcases to display different types of collections and they are designed with security consideration and normally lockable. Display units can be split up into four categories (The shop company, 2013).

- **Self-standing display units** or middle floor cases are those that are installed in the middle of the gallery's room. It has a full access and can be observed from all

sides. Its type alters due to the shape and size of the objects with *vertical* and *horizontal* display cases (Figure 3.34 & 3.35) (Madran, 2012).



Figure 3.34: Self-standing Central Display Unit, Vertical Case (Tilden, 2004)

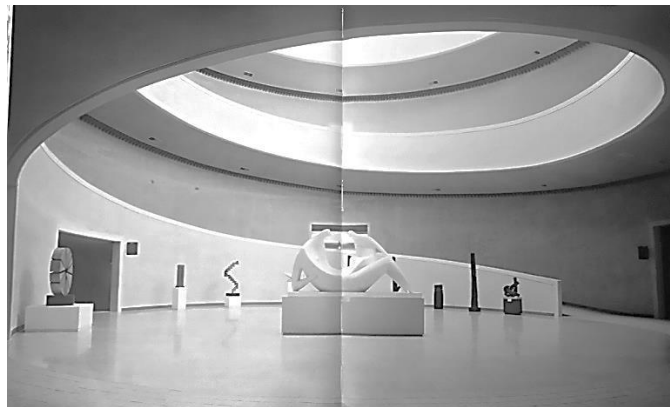


Figure 3.35: Self-standing Central Unit, Horizontal Case(Tilden, 2004)

- **Wall and Corner cases**, are units that are installed on the walls or located beside the walls. These units are accessible from one side. This group consists of two types; *wall mounted cases* and *shelves* (Figure 3.36 & 3.37).



Figure 3.36: Wall mounted display cases, Louvre Museum (Author, 2013)



Figure 3.37: Corner case, Shelf unit (Madran, 2012)

Display platforms are big case that stands on the floor. They are made to keep large objects or a set of related-objects. Objects are located in a display platform in two ways. Objects that are susceptible to be damaged are placed in a *close platform*. It is an enclosed case with glass partitions. Other large objects that are more resistant to damage are put in an open platform unit (Figure 3.38).



Figure 3.38: Close Display Platform (Tilden, 2004)

Interactive display units are mixture of art and technology. They prepare a platform for visitors to interact with the museum individually. There is not a specified shape for this unit. It is shown in many different types due to the function and need (Figure 3.39 & 3.40).



Figure 3.39: Interactive units, Santral Istanbul Museum, Turkey (Author, 2012)

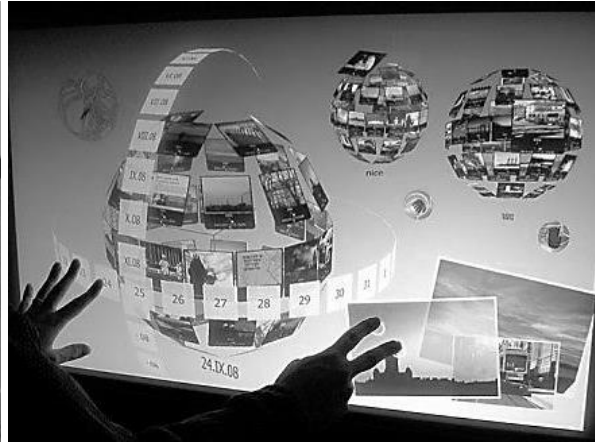


Figure 3.40: Interactive Display unit (Davies, 2008)

3.3.6 Security

The word ‘security’ is attributed to all activities in order to protect the museum and its objects against any harm and treats.

Security in museums is directly related with collections and people, who are associated with them. Different types of protection should be considered for safety of the exhibits inside and outside – during the transportation-of the museum. There are some recommendations for protecting the museum belongings but all aspects of a recommendation is not necessarily fit into all museum types (Keller, 1989). If the building is reused for museum function, it should be secured considering the construction points of the building. But primary measures can be designed in new museum layouts. This consideration can help the security system being located more properly.

Object’s value influences the degree of protection that is needed. Nevertheless, the own building should be well secured against different kinds of accidents.

There are two types of protections available in museum areas: '*object's safety*' and '*people's safety*'. Both of them should be thought-out in parallel to gain the best security system.

3.3.4.1 Safety of objects

Museum is a public building, which conserves variety of collections in order to make them available to people. Therefore, these collections must be kept safe. However, even many precautions are done for keeping them secure, still accidents happen. They may be *accidentally*, such as 'fire, flooding, breaking or hitting, touching and chemicals' or *deliberately*, that can be 'stealing, vandalism, deception'.

Fire is the most minatory phenomenon that can destroy the whole collection and cause an irreversible damage. Most of the fires happen because of lacking attention. Fires protections must be assigned as one of the main design factors in museum building with the purpose of prevent the risk of spread. Good housekeeping, regular cleaning and remove the waste each day, checking the inspection systems before leaving the building at nights, set an automatic fire detection that gives the early sign of presence of fire, smoke and heat detectors, fire alarms with audible function are some of the important precautions against fire (The Council for Museums, Archives and Libraries, 2003).

Collections are always at risk of being theft. Thieves are looking for new ways of entering. Openings such as doors, windows and skylights should be reduced to those that are needed, to prevent or delay the intruders to enter the building (Fig 3.41). Doors have to be secured in order to prevent easy escape during the night time (The Council for Museums, Archives and Libraries, 2003). Museum layout has to be designed so that provides the best security without limiting visit the collections.

Routes and areas should be in the best perspective of guards system and surveillance cameras.



Figure 3.41: Secured window, Louvre Museum, Paris, France (Author, 2013)

Paintings are objects which are proper cases for antique burglars because they can be easily carried out. They have to be displayed far from the doors, well wall-mounted, kept in glass case as needed and being protected with high security alarms (Fig 3.42-3.44). Exposed exhibitions need to place visual barriers such as color bands and small fences on the floors to reduce the probability of inadvertent visitor's touch and recognize the real disturbance (Fig 3.45).



Figure 3.42: Wall mounted paintings in Louvre Museum, Paris, France (Author,2013)



Figure 3.43: Mona Lisa painting in a glass case, Louvre Museum, Paris, France (Author, 2013)

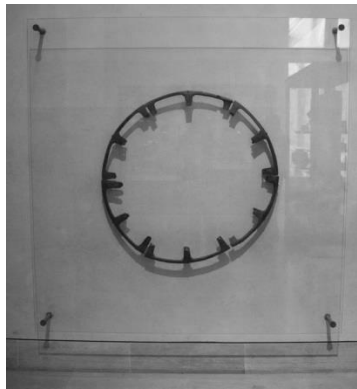


Figure 3.44: An antique objects which is protected by a glass on the wall, Louvre Museum, Paris, France (Author2013)

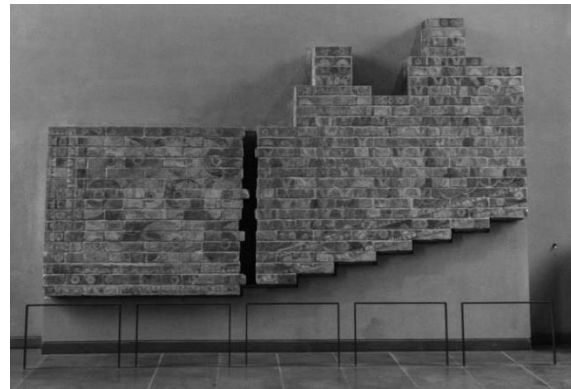


Figure 3.45: Protective fences, antique Iran, Louvre Museum, Paris, France (Author, 2013)

Display cases are very common in exhibiting areas. They are glass boxes which carry the objects that have special status like their size, their archaism and their value (Fig 3.46). Some considerations about these cases are explained in ‘security in museums, archives and libraries brochure, that belongs to ‘The Council for Museums, Archives and Libraries’, 2003, that are going to be written below;

- *Locks*; display case lock should be sturdy and un-theft and hidden from views.

- *Framing*; most common types of material for making the frames are hard woods, aluminum and steel. Steel can be ranged above all; it is resistant and shatterproof and cannot be distorted easily. It is recommended for valuable collections.
- *Glazing*; the most important part of any case is glass material. Normal glasses are not preferred because of their breakable character that is unsecure. Laminates- break but don't explode- and anti-bandit- bullet resistant- are the best types for display cases.



Figure 3.46: Display case, Louvre Museum, Paris, France (Author, 2013)

3.3.4.2 Safety of people

Another important part in museum security is to protect visitors from any kinds of harm during their visit and assign the best and possible solution for their benefit. Some of these precautions are structural safety which means the physical system that is set on the building.

In case of fire, an active program of evacuation must be available, emergency exits should be visible through the exhibition and fire detectors are going to start spraying

water, but they don't have to spray in exhibition halls with artworks and collections which are going to be ruined or vanished with water. Visible light bands on the floor are important in case of heavy smoke. Elevators and escalators are two alternatives that can help people to leave the museum sooner.



Figure 3.47: emergency exit sign and fire detector (Siemens, 2013)

Besides, in a lecture to a Museum and Exhibition Design course, 2012, B. Madran explained that, in museum and exhibition areas:

- No sharp-cornered elements; somebody might be hit by them
- No exposed nails and screws
- No step or stage in the exhibition halls, people's attention is on artworks and they may fall down
- No exposed electric - electronic components
- No anti-glare glass (only safe glass); they can not be seen easily especially when visitors are mainly focusing on collections
- Color difference between the floor and walls barrier

3.3.7 Environmental Factors

Environmental factor is another vital factor in museum area that has a great impact on collections. Standing a museum open, is related to its collections. First of all, being predominated on issues such as collection's material and their type is indispensable. They should be kept from being deteriorated. The act of deterioration is progressive destruction of objects that happens by the interaction of them with their environment. There are some deteriorating agents that effect the museum environment; *contaminant*, can discolor, corrode and damage all types of objects. They can be gases like hydrogen sulfide, liquids like grease from human hands or solids like dust. But air can contain all types of contaminants together. Unnecessary light such as UV can also darken or face the colored objects (museum handbook, 1999). Totally, four main factors can be the reason of deteriorating the collections that are:

- Temperature
- Relative humidity (RH)
- Pests
- Pollutants

By learning about the chemistry and physics of temperature, RH, pollution and light, it is easier to perceive the effect of them on the museum space. High temperature can have destructive effects on objects in museums. It increases chemical reactions and biological activities and cause material getting soften. The higher the temperature goes, the higher the risk of decay goes. Normal temperature level in museum area is 18-20°C. It should not exceed 24°C. Avoid any immediate change in temperature;

fluctuation can cause material being damaged. This factor has a direct relation with RH (Museum handbook, 1999).

Some cases should be considered to prepare the best environment in the museum area. In case of adjusting the temperature:

- Doors and windows don't have to be opened but when needed.
- Temperature level must be stable and prevent sudden changing
- Use lamps with less heat production ability
- Use 2 doors for entrance if possible (Cassar & Great Britain, 2000)

RH which is the abbreviation of 'relative humidity' is the relation between the air and the amount of vapor it can contain. If RH gets high, objects absorb moisture; metal may corrode or change its shape, woods get deformed and insects get more active. High humidity hastens deterioration process; whereas low level of RH make objects split, crack, discolor or break (Oxford university library services, 2005). Fluctuation let materials be in a risky condition; for instance, paintings, photographs, furniture, which have composite and laminate character, may be damaged in this situation.

Relative humidity (RH) has an inverse relation with temperature. Rh goes down when temperature goes up, and it goes up when temperature comes down (Museum handbook, 1999).

In order to control RH in museum's interior space;

- Sealed doors and windows
- Sufficient maintenance program for roofs and canals
- Efficient air conditioning system
- Prevent fluctuation in temperature, keeping humidity at a normal level
- Humidifiers and dehumidifiers in some areas (Shiner, 2011).

As it is obvious, temperature and relative humidity have a relation with each other. Both have impact on museum environment and have to keep stable as much as possible. Beside some interior consideration, it should be noticed ‘which type of climate does the region which the museum is being built or going to be built have?’ is it dry, humid, tropical or cold? Then, the nature of each object in collection should be cared to prepare a proper environment for them. It can help to anticipate and prevent unforeseen events.

Pests are group of insects or animals which feed objects as their food and the dirt around them. They have destructive impacts in museum area. Damaging objects, pierce or make them molder are some of these bad effects. Beside their harmful impression on objects, they have some precarious effects on human’s health. In order to prevent the proliferation of pests, some cases should be done like:

- Equip entrances that can prevent insects to come
- Protect object which are vulnerable to pests
- Set an efficient program to trap them, staffs should have pest activity alert
- Don’t let people to bring food inside the building,
- Assign good cleaning plan

- No pets should be allowed to enter the Museum building (Zycherman & Schrock, 1988).

Pollutants are two groups of harmful gaseous and particulate contaminants which combine with the air moisture and make dangerous and even fatal acids that damage materials. Gaseous pollutants such as sulphur dioxide, nitrogen oxides, hydrogen sulphide and ozone, may make the objects being discolored, bleached and/or even weakened. Particulate contaminants like dirt, soot and soil, make materials disfigure by absorb moisture or act as food source for pollutant; they can easily being transmitted to collections even by human hand oil (Oxford university library services, 2005). Gaseous contaminants have the most destructive effect of all. But, by being aware of temperature and humidity effect on museum objects, all of them must be controlled in parallel. Because controlling pollutants merely, cannot prevent form deterioration.

There is not any standard level for pollutant in galleries and museums. They cannot be measured easily and pollutant monitoring expenses are high; not all the museum does the monitoring. Most of the measurements are done on the light, temperature and humidity. Parameters for gaseous and particulate pollutants are less calculated and specified, because they are hard to measure. (Keene, 2002). In order to control them from harming museum collections, some recommendation can be noticed;

- doors and windows must be well-sealed
- displays and furniture should be immovable
- artifacts can make pollution themselves
- sufficient cleaning program

- Vacuum clean the floors to remove dust (sweeping re-circulates dust)
- Prohibition of smoking inside the museum
- Keep away any photocopier from the objects
- Filtered air conditioning system (Greaves, 2008)

3.3.8 Style

Style has a complex and debatable concept. It changes in face of different situations and regions. It has a profound connection with culture. Architecture and culture are joined together to make different architectural styles.

New style in architecture has a story in the past. New type of construction was created from Renaissance Period but Crystal Palace building in 1851, the huge iron and glass structure proved itself as a more common and familiar construction with the architecture of our day. Using metal, surface proportions and studying silhouettes were important in the works of nineteenth's century architectures. There were established a new tradition in architecture. Although, all architects invented their own way of designing with some inspiration of the past, however, there were not a specified stylistic approach at the end of nineteenth century and the beginning of twentieth century. One of the first approaches to Modern architectural design was appeared in America, when Frank Lloyd Wright with his open plan idea broke the traditional mold of architecture. It was then accepted that an interior could be designed in freely three dimensional plans, than an enclosed indoor space made of blocks. Even when he was a pupil of Sullivan, he stayed as an individual architect. Experimenting different materials and manners was done continuously by him. It was now and then, that new materials and construction method were utilized in the

construction industry. His works were important in genesis of international style (Hitchcock & Johnson, 1995).

After 1920, most of the architectural designs are categorized as International Style. It is expanded on the common criteria with Modern Style. Walter Gropius, Mies van der Rohe, Le Corbusier, Philip Johnson, Frank Lloyd Wright and Alvar Aalto are the famous pioneers of the International Style. Its criteria are volume, balance and expulsion, which comes instead of mass, symmetry and ornament and it was soon famous around the world (Hitchcock & Johnson, 1995).

Culture is a set of common rules among a number of people in a place. It make them being characterized as a community which share same habits and characteristics. This let them feel closer to themselves, like people who speak a common language and live in their country. Besides, they are some subcultures identified in societies like the people who immigrate to another country. Although, they have a defined culture as their background, they like to be accepted as a member of new society they live in. However, they tend to their originality whenever it is possible. To assume the whole world as one society, culture means common behavior pattern that whole people in the world share with each other. It can be named 'human culture' such as using languages to communicate, age, gender, making a family and playing games. In the same way, it can be said that, culture is more spiritual than being materialistic; it is a process that contains a set of notions, somehow in relation with history, and it can be an instruction to change the meanings (Greenhill, 2000).

Museum, as a multi-cultural institution plays its role as a medium to convey the cultural differences with contexts, for those who seek a specific concept in museum

heritage (Macdonald, S. (Ed.), 2006). Museum's mission is to present the objects to be viewed. 'Speak to the eyes' theory, which was mentioned during nineteenth century, says that information is absorbed more rapidly by seeing than other ways. It is under the meaning of visual culture (Greenhill, 2000). After that time, one of the aims was to prepare an environment in which people can come, visit, take part, perceive and share their experience and information. Its effect is so great that can create new ways of perception among users and their behavior. Each person gains his information from the museum and reacts according to his cultural background and knowledge. People around the world visit museums for different reasons; visiting the art works, knowing national history better, understanding the human origin and lots of other reasons.

The terms culture and style have some effects on buildings and it differs due to the country which it is constructed in. Each region and each society has its own cultural characteristics and stylistic approaches and respecting to those indexes can guarantee the success of the building. Indexes such as material of construction, form and shape of the building, lighting design, theme of the exhibition and target group are some of the most important samples of them. Utilizing a well-qualified material in a wrong place, may turn it into a heterogeneous and unusual structure. Being predominant over the aspects that people in a society prefer to face or unsatisfied with, is necessary for designer.

As time passes, people's demand and tendency alters. They need to experience and take part in generating the information that they are learning. Museum is a place in which users are inspired by collections and all museum facilities. It should prepare an environment to attract a twenty-first century man. It should give the message of

the past with the facilities of present which let the visitor approach to the future. These institutions try to provide interactive experiments available to public; people use these social Medias, in some cases they create their own experience and express their perception with other people. This let each individual have his own domain of intellectual. Beside the almost direct effect of social media helps the museum curators to estimate how much that museum was successful in being accepted by people in '*making meaning*'.

3.4 Summary of the Chapter

Design of the museum buildings in two different categories were explained and discussed. In addition, some of the interior design features that have great role in designing a museum were mentioned and explained. Accordingly, as it was proposed in this chapter, these interior design factors should be mentioned inevitably. Lacking each of these factors can create a big flaw for the museum and lead it toward failure. Although each museum building has its own characteristics and identity, but some general rules and regulations can be defined for them as a whole. Consequently, with the information expressed above, case studies are going to be discussed and analyzed in the next chapter.

Chapter 4

CASE STUDIES AND ANALYSIS

4.1 The Evolution of Museums in Different Regions

Throughout the history, people with distinctive cultures gave exceptional care to protecting and displaying their valuable objects and survive their culture, art, design and history by the museum buildings. In some cases, buildings is set to be a museum and it is constructed basically upon this function and in some other cases, building is adapted and renewed to be a museum building.

As an originally designed museum building, which is planned basically to be the house of exhibiting collections, there is a mixed bag of concepts accessible for the architect to outline the best place for presenting the objects. Interior design theme might differ due to the type of collection or architect's theory about the space and requirements of it.

Conversely in an adaptive reused type building, the issue is distinctive. The existing building and its inside space ought to be composed due to the collection type and main theme without losing its main characteristics.

There are many interior design approaches that are analogous in all museum building types. Despite of the variety of interior design features, the focus of this thesis is on contemporary art museums. These features are; functional arrangement, circulation

and accessibility, color, light, finishing material, exhibition units and furniture, security, environmental factors and culture. Each of these considerations is discussed related with the interior design of the contemporary art museums. In addition, if the given factors are not considered in a correct way during the design and construction process, they can turn into problems. Since artworks are sensitive and delicate, The light emission angle, effect of the color on the exhibiting, the proper material for the interior space, proper arrangement of the collections, safe environment for people and artworks, healthy interior space and cultural preferences are critical and requisite factors that should surely mention in a contemporary art museum building design.

Culture is also one of the factors that have a direct effect on the design and the architect. People's demands and interests change by time and rapid developments in science and technology accelerate this process.

Louvre Museum was not originally a royal palace. In 1190, King Philippe Auguste, ordered to build a huge fortress to protect the city from invaders in the location of Louvre Museum. From 1364, the site was used as the palace and it was changed by time to the current function that is the house of preserving art objects and collections from around the worlds. The Louvre Pyramid, that is the extension part of the Louvre museum, was built in 1989 by Chinese architect I.M. Pei by the needs of the time and it is utilized as the main entrance of the museum at present (Figure 4.1& 4.2). The lobby is built by the latest technologies and materials of the construction time, besides the old building that is kept intact.



Figure 4.1: Louvre Museum and its new Pyramids, Paris, France (Author, 2013)



Figure 4.2: Louvre Museum, Main Entrance, Paris, France (Author, 2013)

Edo- Tokyo Museum is located in Japan. It is a history museum of Edo Period of Japan, which was the time of economic rise, isolationist policies and growth of art and culture. It was founded on March 1993 as the place of preserving the Edo heritage. It resembles history, art, culture and architecture at the same time. It could separate the old Tokyo (Edo Period) from modern Tokyo in a good way. Although, (Edo-Tokyo Museum, 2009) it is a history museum the main and known index is its gate which is a high tech structure which its form is derived from the storehouses in past times. The role of culture is visible quite well. Nostalgic status of routine life is exhibited in the museum into the scale without any limitation (Figure 4.3-4.6) (Edo-Tokyo Museum, 2009).



Figure 4.3: Edo- Tokyo Museum, Japan (Edo-Tokyo Museum, 2009)

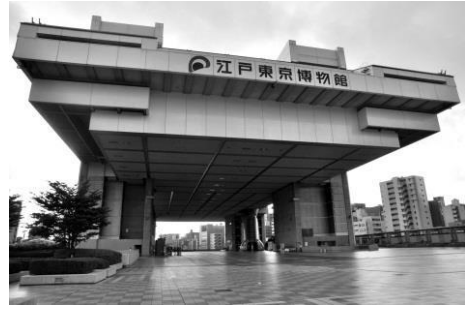


Figure 4.4: Edo-Tokyo Museum, Japan (Galloway, 2013)



Figure 4.5: Edo- Tokyo Museum interior, Japan (Edo-Tokyo Museum, 2013)



Figure 4.6: Edo- Tokyo Museum interior, Japan (Edo-Tokyo Museum, 2013)

In different countries with various historic and cultural backgrounds, it is possible to observe different design approaches.

4.2 Method of analysis

Based on the information given, buildings that originally designed as museum and the ones that are adapted to a museum are going to be analyzed. Six contemporary art museums have been chosen among all available cases due to the optimum use of interior space and their popularity. All of the chosen cases are peculiar by themselves and they are prominent museum buildings around the world. They are going to be analyzed according to interior design features that are functional arrangement circulation and accessibility, light, color, finishing material, exhibition units and furniture, security, environmental factors and style.

The analysis is based on different methodologies such as qualitative research. Some of these cases are visited, analyzed and photographs are taken. In other cases, as there isn't opportunity of visiting them, documentary movies and reliable resources made their analysis possible. Totally, data have been collected through literature survey, field study, observation, photograph, videos, documentaries and books.

Following, the case studies are going to be categorized and explained;

- **Building Originally Designed as Museum**

- Solomon R. Guggenheim Museum: in New York, USA, architect: Frank Lloyd Wright, construction date: 1943-59
- Centre Pompidou: in Paris, France, architects: Renzo Piano & Richard Rogers, construction date: 1971-77
- Museum of Contemporary Arts: in Tehran, Iran, architect: Kamran Diba, construction date: 1977

- **Buildings Adapted to Museum**

- Tate Modern: in London, UK, architects: Jacques Herzog and Pierre de Meuron, construction date: 2000
- SCAD Museum of art: in Savannah, Georgia, USA, architect: Christian Sottile, construction date: 2002
- Istanbul Modern: in Istanbul, Turkey, architects: Melkan Gursel & Murat Tabanlıoğlu, construction date: 2004

Selected cases are considerable samples that can be discussed and compared due to their interior design features. Their efficiency and reliability will be explained after the analysis.

Table 4. 1 Inventory Table

General View	Plan schema	Functional Arrangement, Circulation and Accessibility
Color and Light	Finishing Materials	Exhibition Units & Furniture
Security	Environmental Factors	Style

4.3 Case Studies

Three buildings originally designed as museum and three adaptive-reused type of museum building are selected for the analysis of interior design criteria and the comparison of them and give information about their differences and similarities.

4.3.1 Museums Originally Designed as Museum

Buildings which originally planned, structured and designed to be a museum are those, that are considered to be the center of keeping diverse sorts of collections. These structures fundamentally designed with the interior design criteria that are suitable for collections. The capacity changes due to the collection type. Next part holds three cases in three different countries that were constructed originally as museum building.

4.3.1.1 Solomon R. Guggenheim Museum

Solomon R. Guggenheim was a business man and an art collector who established a museum of the same name in New York, fabricated by Frank Lloyd Wright in 1959 (Henning, 2006). In 1943, Hilla Rebay, who was the Guggenheim's counsel, chosen

Frank Lloyd Wright for this project. Rebay composed a letter to Lloyd Wright that: a wise architect is needed who fights for space, organize and love the space. The building should turn into a monument (Tilden, & Rocheleau, 2004). The idea of the creation was to permanently house the famous works of well-known modern artists like Vasily Kandinsky, Piet Mondrian, Moholy-Nagy, Paul Klee and Pablo Picasso. Also, temporary exhibitions are hold in museum galleries during the year. The building is a standout amongst the most mainstream masterpieces of Lloyd Wright and a standout amongst the most well-known structures in modern architecture. Wright's Guggenheim Museum in New York City is an alternate case inside and out. The Guggenheim's fundamental display surpasses even Unity Temple in simplicity. The floor climbs as a nonstop, sloping ramp. There is basically one story, one outside wall, and one interior wall. The slope is the substance that makes the exhibition space and the artworks are mounted on the walls along the path. It is additionally the outside structure, the flow, the building envelope, and the presentation space itself. It is coherence in structure, space, and form (Cruz, 2012). Guggenheim Museum is a conceded architectural building. However, it was not successful in terms of function. Numerous critics were told about the interior part dividers. Despite the fact that the building is loaded with day lighting, but the inside walls are not subject to it and they should be artificially lit. Tilted walls with 3° slope make challenges for guests to see the mounted artworks. Also, the curved interior walls make the fine art's mounting more difficult (Figure 4.7 & 4.8) (Dispenza, 2012).

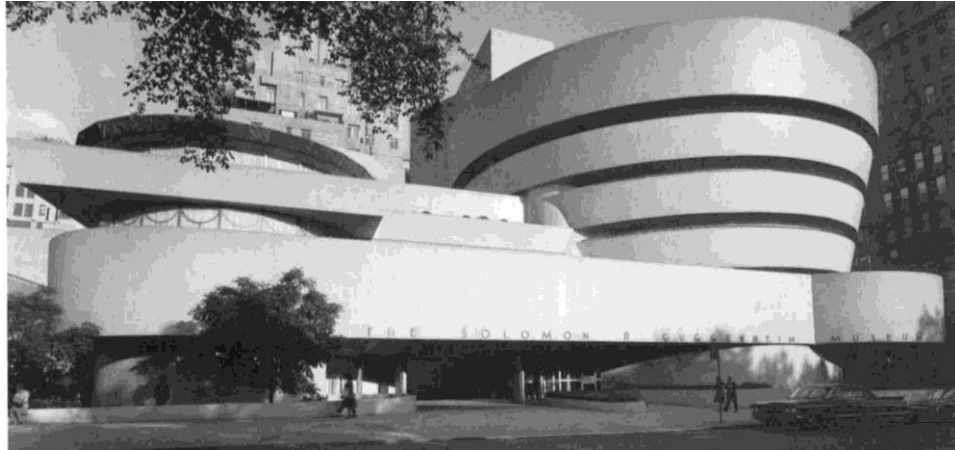


Figure 4.7: Solomon R. Guggenheim Museum at the time of inauguration (Quinan, 1993)

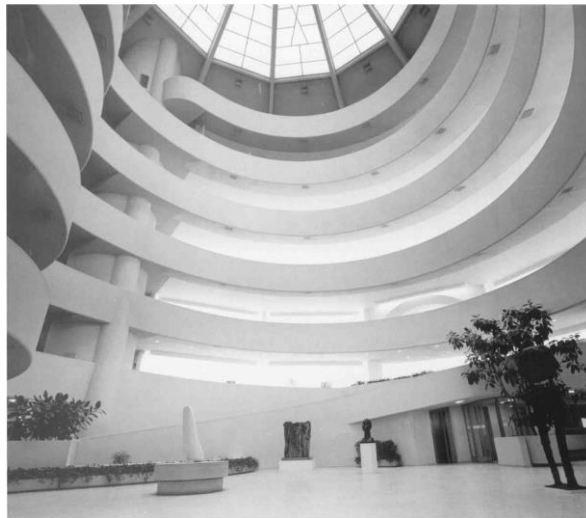


Figure 4.8: Solomon R. Guggenheim Museum, interior view from rotunda (Quinan, 1993)

In 1992, a simple rectangular block that was designed by Gwathmey Siegel & Associates architects was attached to the museum building so as to give the necessities of museum building. It holds the administrative and curatorial offices in order to let the main building being completely dedicated to artworks (Figure 4.9). In 2002, a broad restoration has been carried out on the building, that contained numerous cracks and outside harms (Proimos, 2011).



Figure 4.9: Solomon R. Guggenheim Museum and the extended block (Newhouse,1998)

Plan schema: the building is a cylinder that gets wider as going to the top. The circulation path is a spiral ramp that has an entry in each level to the new extended rectangular building. The main and the first museum building that Frank Lloyd wright designed, didn't have any walls or partitions along the path. His concept was to see the artworks constantly in a continuous road to the top. After extension, the administration sections moved into the new part and the main building was completely dedicated to art exhibitions and collections (Jerome, 2009).

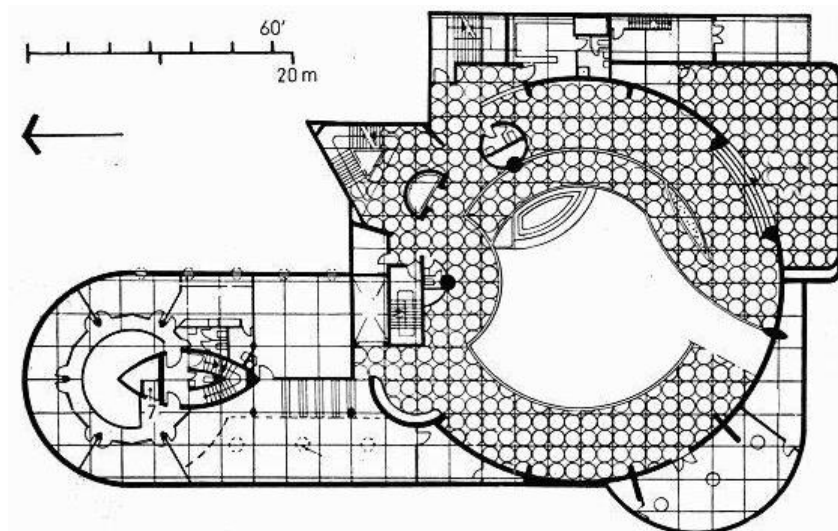


Figure 4.10: Guggenheim Museum plan (Matthews & Artifice, Inc, n.d)

Functional Arrangement, Circulation and accessibility: A huge rotunda is appeared in front of the eyes just after entering the museum building. Information desk and ticket counter is located in the rotunda. The museum has an ascending spiral form and the art works are located along the path to the top. It has six stories with a continuous, non-stopped pathway. There is also an elevator that carries the visitors to the top and let them flow and visit the collections as walking along the ramp to the down (Figure 4.11 & 4.12). Café is located on the third floor, next to permanent Kandinsky's collection. Auditorium is underneath the galleries and restaurant is next to rotunda. (The restaurant is designed in 2009 by Andre Kikoski, who won the 2012 AIA Institute Honor Award for designing the restaurant. Although, it is located where Frank Lloyd Wright envisioned, Kikoski and his team were challenging, how to interpreted Guggenheim's energy into a new language (Figure 4.13 & 4.14) (Dispenza, 2012).



Figure 4.11: Rotunda, Solomon R. Guggenheim Museum (Proimos, 2011)

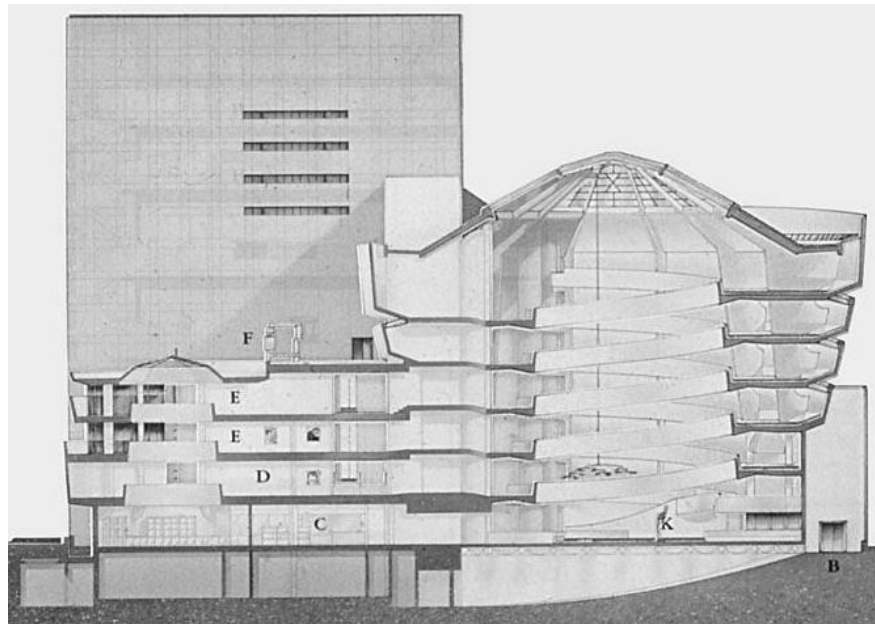


Figure 4.12: Guggenheim Museum circulation and orientation (Alspector Architecture, 2013)



Figure 4.13: Auditorium, Solomon R. Guggenheim Museum (Alspector Architecture, 2013)



Figure 4.14: Wright's Restaurant, Guggenheim Museum (Dispenza, 2012)

Color and light: the original color of the museum was a light yellow or light brown that was known as cocoon before. After restoration in 1992, there were a controversy between purists and conservationists in choosing the color; that the color should be reapplied the same as Wright's choice or it should be changed as the museum is a live institution that evolves during time. The final choice that LPC (The New York city landmarks preservation commission) voted was not the original color, but a whitish new color (Jerome, 2009).

The huge dome on the top of the rotunda fills the inside with the pure daylight. However, with this huge glass dome structure on the top, the slope of the walls shelters the daylight to be emitted on the artworks that are along the ramp. Moreover, artificial triangle-shaped luminaires are considered to lit the galleries and act as the main lighting source in the museum (Figure 4.15).



Figure 4.15: Light and Color in Solomon R. Guggenheim Museum (Frank Lloyd Wright Foundation, 2009)

Finishing material: constructing such a huge structure needs resistant materials. The museum is a big white cylinder with a glass dome. The dominant material is concrete. Three types of concrete were used in this structure; reinforced concrete for the superstructure, shotcrete (sprayed concrete onto the surface with a high velocity. It was known as Gunitite before. It has high durability, Impermeability, unrestricted shapes and high quality). It needs no framework and is cost effective for exterior curved walls and lightened concrete for ramp and interior walls. Galleries are coated with suspended plaster in white. Lighting fixtures are in shape of triangle in the main area (The Aberdeen Group, 1983). Blue leather banquette, walnut layered curvilinear walls, metal work and corian are the materials that used in the restaurant (Dispenza, 2012).



Figure 4.16: Solomon R. Guggenheim Museum, Interior space (Tilden, & Rocheleau, 2004)

Exhibition Units and Furniture: Beside the permanent collections, display units in Guggenheim museum differs due to the exhibitions. Some display bases put in the museum space when they are needed. Most of the temporary collections of the museum are mounted artworks. Some others are hanged from the roof or placed on the ground (Figure 4.17 & 4.18).



Figure 4.17: John Chamberlain Choices exhibition, February May, 2012, Guggenheim Museum (Futureclaw, 2012)



Figure 4.18: Zaha Hadid's Exhibition in Solomon R. Guggenheim Museum (Horsley, C. B, n.d)

Furniture can be seen in the atrium. Ad-hoc furniture, made by Lloyd Wright is set there. But it is mostly unnoticed by visitors upon their arrival to the museum because of the interesting spiral form of the building. There are some other sitting areas in the ground floor to act as the resting area (Figure 4.19& 4.20).



Figure 4.19: Ad-hoc Furniture made by Frank Lloyd Wright in the Rotunda, Solomon R. Guggenheim Museum ,USA (Zeballos , 2012)



Figure 4.20: "Hanging out in the Museum", Cai Guo-Qiang, Guggenheim Mueum (Zeballos, 2012)

Security: protection is one of the most substantial issues in museums. There ought to be a safe environment for both artworks and individuals. Concerning this need, information desk is set in front of the door entryway in the rotunda. Guiding maps are accessible for guests at the counter to lead them through their visit. To secure the artworks, surveillance cameras, and sensor fire detectors are assigned in the exhibition halls. The most imperative flaw in the exhibition hall before restoration was the absence of enclosed fire exits, because it doesn't have specified floor levels and there were no stairs. After the expansion, there are openings in every level to the extended block. (Quinan, 1993).

Environmental factors: The whole museum area has a proper air conditioning system and cleaning program. Besides, the sun emission is controlled by matt glasses of dome-shape roof to decrease the damages that sun ray can cause (Figure 4.21).



Figure 4.21: Matt glass and air conditioning system, Solomon R. Guggenheim Museum (Tilden,2004)

Style: Frank Lloyd Wright's idea for designing this building goes back to his organic philosophy. The building is a full contradiction among the urban fabric of New York; a modern, non-cornered, spiral building, that opened its way through the specific, rectangular buildings, stimulated much opposition and ignited a new fire in the modern architecture's world (Jerome, 2009).

4.3.1.2 Pompidou Center

Centre Pompidou, also called Centre George Pompidou is a complex in Paris. Its name is derived from President George Pompidou, who decided to build this center. It was opened officially in 1977 and it is one of the most remarkable landmarks in Paris. Its architects are Renzo Piano and Richard Rogers who were well-known as world architects in the world. Pompidou turned into the focal point for contemporary arts. It consists of various types of function such as a library, a historical center of up to date abstractions, silver screens and middle for music and acoustics studies. It is a center for information and leisure, which can soothe various sorts of desires.

Its plan is rectangular. It has open plan organization so as to have the capacity to be acclimated within diverse frameworks. The reason of its notoriety is that it brings art to the streets and make it public. It was a stage aside from the Gothic and old

example of Paris. High-tech style of the building that is a gigantic noticeboard and its enormous piazza was the essential part of the project. After the opening, it was accepted quickly by people and it breaks the rules of customarily indoor exhibition halls and carried it to the streets and opened its space to public (Powell, 1999). Museum of modern art in Pompidou Center covers a huge number of 20th century arts. It has six floors with diverse parts with specific parts to blanket all the artistic movements. (Figure 4.22 & 4.23). The fourth floor accommodates the exhibition hall of modern arts and the fifth is the place of temporary presentations. The library, which is located in the first, second and third stories, has a different passageway for simple entry. The ground-floor is additionally adjusted. Expansive openings in the range of the entrance door join to the three underground levels (performance rooms). The ground level has passageway, ticket office and information desk. Two mezzanine levels consist of boutiques and cafes. They are all connected by lifts and stairways (Figure 4.24) (ICI, Chien, Culliford, & Chang, 2012).



Figure 4.22: Centre Pompidou, front view and piazza, Paris, France (Author, 2013)

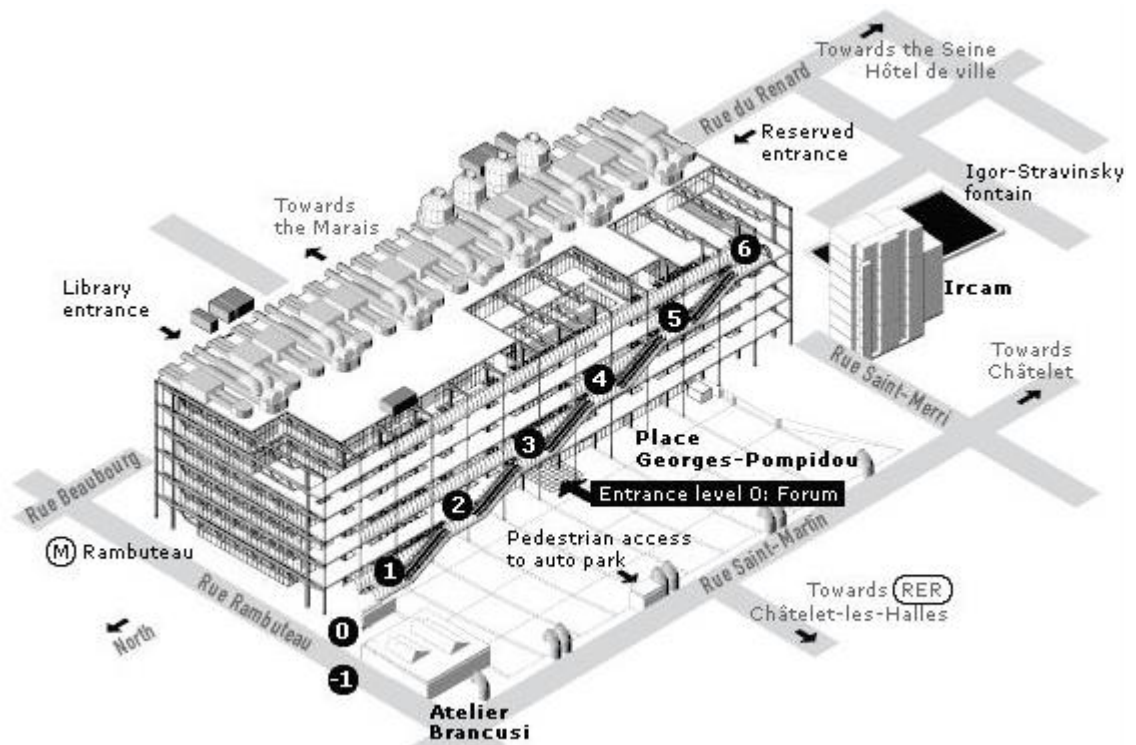


Figure 4.23: Pompidou Center, general view (Centre Pompidou, 2005)

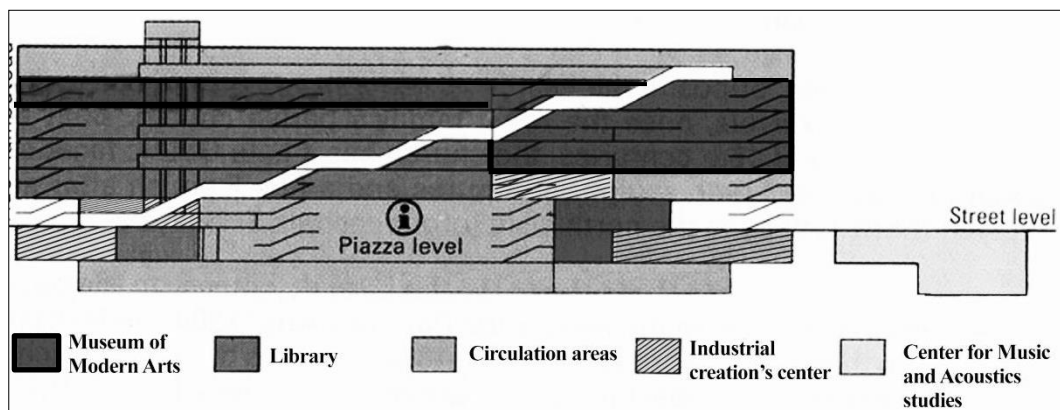


Figure 4.24: Different sections in Pompidou Centre (Georges Pompidou, n.d)

Plan Schema: In the entrance of the building, there is a huge noticeable lobby. Gift shop, locker room, book shop, restaurant, sales counters and information desk takes place in the hall. Every people find their orientation in this place. There are sufficient guiding signs for individuals and it is not difficult to find the way (Figure 4.25).

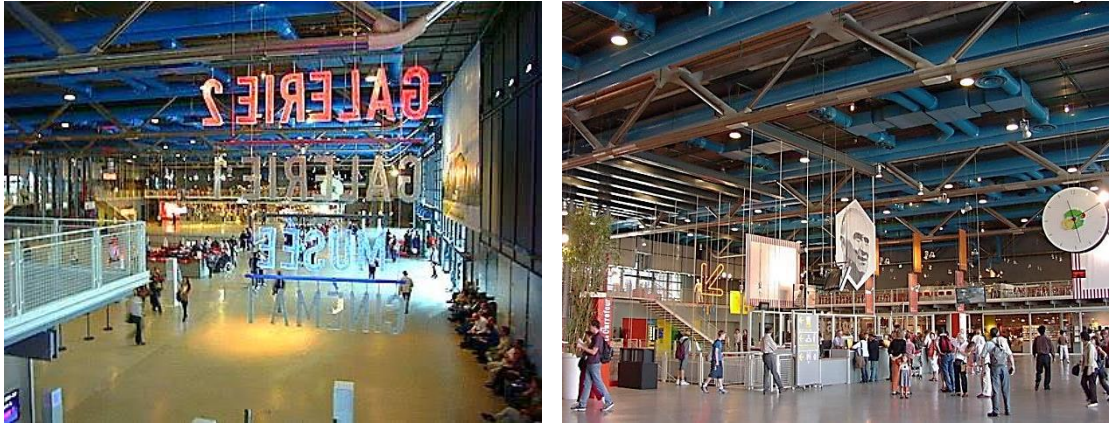


Figure 4.25: Lobby of Pompidou Center, Paris, France (Author, 2013)

Functional Arrangement, Circulation and Accessibility: The museum has a rectangular plan, which galleries are located serially and in front of them. According to the arrangement that is built in 'suggested approach' form, when visitors follow the primary axis, it is possible to visit the fine arts in a sequence. There are signs that are encompassing the displays in order to create a better orientation (Figure 4.26).

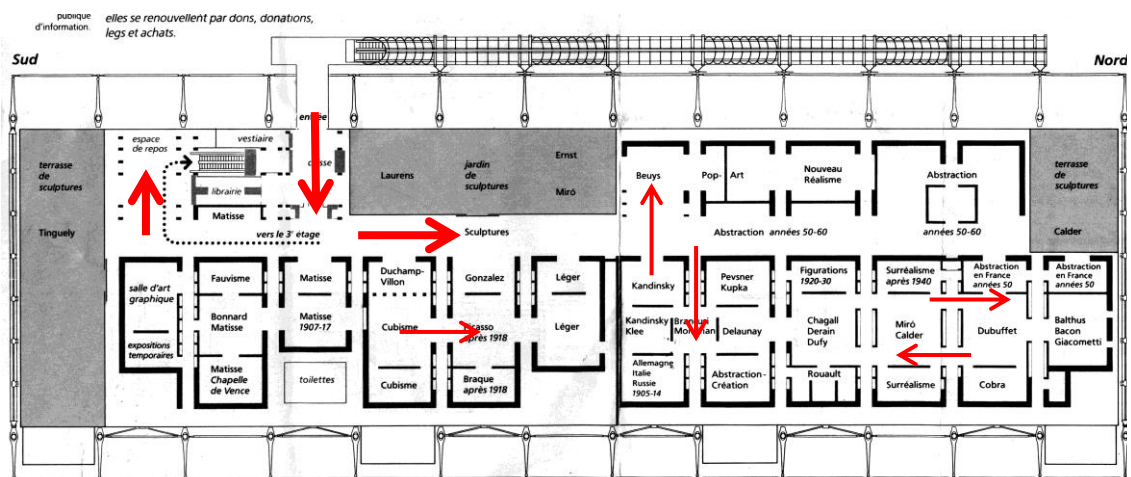


Figure 4.26: Plan for permanent collection's floor in Centre Pompidou, Paris, France (McDonald, 1998)

Color and light: White color assumes an impartial part in order to express the quality and importance of the mounted artworks more decisively. Reconciled and tremendous glass front section of the building consumes the daily light. However it

doesn't cover the entire indoor space, nevertheless, artificial illuminating presences are the dominating lighting source in galleries.

Finishing material: Outfitting material is one of the essential elements in a gallery territory. It might enhance the nature of the space or influence the fine arts by wrong decision. Pompidou Museum's structure is made with steel and glass. Floors are covered with linoleum. Inner walls are wooden panels that are coated with plaster and white paint. Services are exposed and visible through the complex. Linoleum, help the display space being quieter because of its character. Its cleaning is easy and it gives a sparkling display to the floor (Figure 4.27).



Figure 4.27: Finishing material, color and lighting in Pompidou Modern Art Museum, permanent collections (Author, 2013)

Exhibition Units and Furniture: Pompidou is an acceptable host for every kind of modern arts. Various types of artwork can be seen together inside the museum area. This multiple acceptance could be one of the reasons of its reputation among different groups of people. It breaks the limits of traditional art types and let modern art express itself in anyway it desires. Steel and wood benches are rarely seen in the middle of galleries or along the museum's corridors. These small benches are placed to let the visitors sit and think about the artworks that are hanged on the wall. Some

of the art works are placed on an open platform and some others are on the walls (Figure 4.28).



Figure 4.28: Display units and furniture, Pompidou Center, Paris, France (right: Author, Left: Greaves, 2008)

Security: One of the methodologies in display center, is guarding both collections and individuals from damage, and making the sense of security. There are automatic protectors in the museum in case of fire. There are established in the regions that none of the fine arts are delicate to water. There are also surveillance cameras that protect and have an eye on everywhere in order to provide the best safety for objects in the museum. Small fences are inserted before displayed artworks to make a limit line for guests. Moreover, there is a check-in point at the entrance door. Some of the art museums don't allow the guests to bring the cameras with flash and this ought to be let them know at the passage entryway. Exit signs and guiding maps are obvious around the galleries (Figure 4.29).

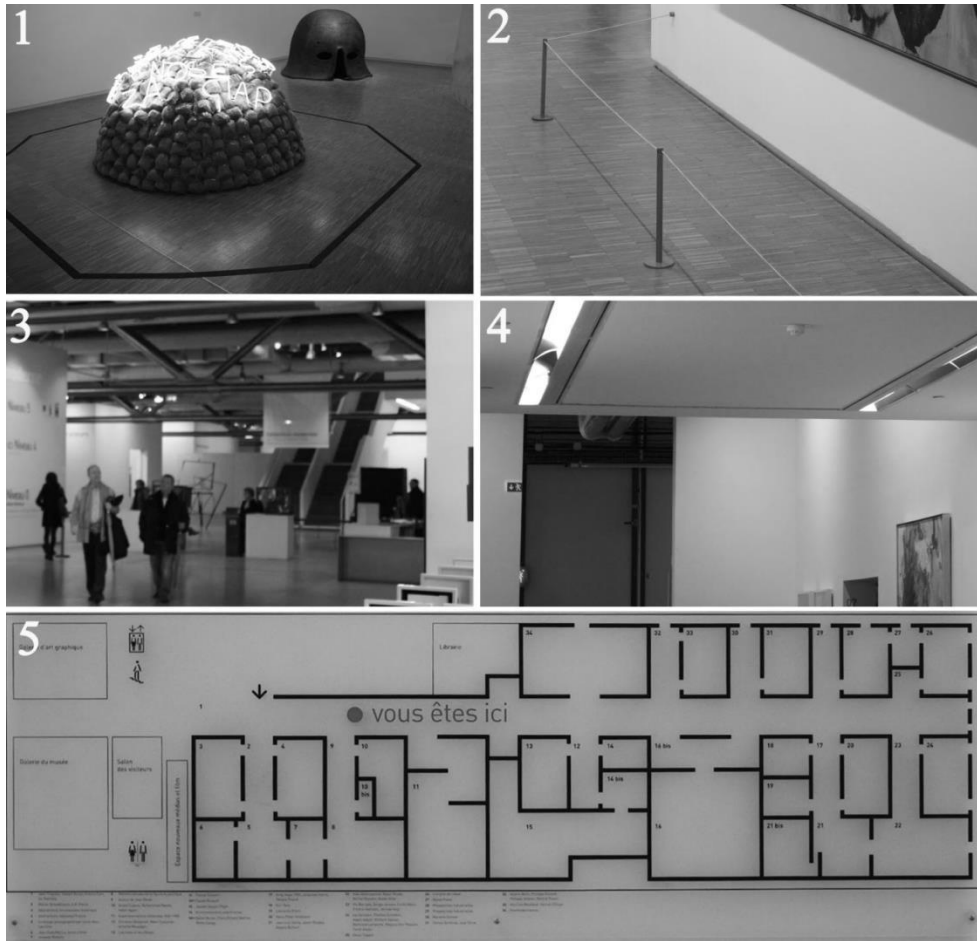


Figure 4.29: Security factors in Pompidou Centre, 1&2: fences, 3: check-in point, 4: fire protector & exit sign, 5: guiding map (Author, 2013)

Environmental factors: For controlling the hurtful impact of sun, sensitive works of art are placed in displays that are not taking direct daylight. Otherwise, sun can cause harmful effects. The primary lighting source in the exhibition hall and corridors are artificial illuminates. Food and animals' entrance is not allowed to museum because of the cleaning case and dust reduction. There is a legitimate cleaning system around the gallery building. Also, ventilation, which has an extraordinary impact on the well-being of the artworks and guests, is providing by the uncovered steel canals in and outside of the building.

Style: the structure has been built under the international style; its idea is identified under three principles: simplicity rather than ornament, balance rather than symmetry and volume rather than mass (Hitchcock & Johnson, 1995).

4.3.1.3 Tehran Contemporary Art Museum, Tehran, Iran

Tehran Museum of Contemporary Arts was inaugurated in 1977 in Laleh Park in capital city of Iran, Tehran. The whole land area is about 15000m² and the building area is about 5000m². It took some of the significant cultural aspect of Iranian architecture. Kamran Diba, who is its well-known architect, was inspired by the Iranian traditional architecture and philosophical concepts. Museum building, which was originally designed and constructed as museum, is one of the valuable and unique samples in Iranian architecture. It is a fusion of modern and traditional architecture in desert regions of Iran. The museum contains the most comprehensive collection of Western art in the continent of Asia (Hayatdawood et al, 2013). Three galleries holds permanent collections of 3000 valuable art works of famous artists in the world such as David Hockney, R. B. Kitaj, Jean Dubuffet, Pierre-Auguste Renoir and Pablo Picasso. Also six other galleries are used for temporary exhibitions throughout the year (Figure 4.30).



Figure 4.30: Tehran Museum of Contemporary Arts, Iran (Author, 2012)

The building is presented as an artwork by itself, which express the contemporary art in Iran and shows the modern movement in the world.

Plan schema: the museum's plan has a number of geometrical shapes, which come together and shape the museum. Rectangular and cubic shapes are dominant in the plan schema. It has nine main galleries, book store, café, art treasures, staff offices and archive. Sculpture garden shape the outdoor space of the building and it contains some of the museum sculptures.



Figure 4.31: Museum of Contemporary Arts , Tehran, Iran (Google Maps, 2013)

Functional Arrangement, Circulation and Accessibility: museum's interior space is a quiet, intimate and familiar space. The architect tried to separate the visitors from crowded outer environment and lead him concentrate on their inner feelings and perception. One of the considerable points about the interior space is the circulation paths. Visitors' first track is a spiral ramp that leads the user through the galleries toward the underground. At the end, after visiting all the galleries, the user comes back to the first place that is the entrance door. Nevertheless, the spiral path helps the person to move inside the galleries and having access to everywhere without any unpleasant feeling of being lost (Figure 4.32 & 4.33).

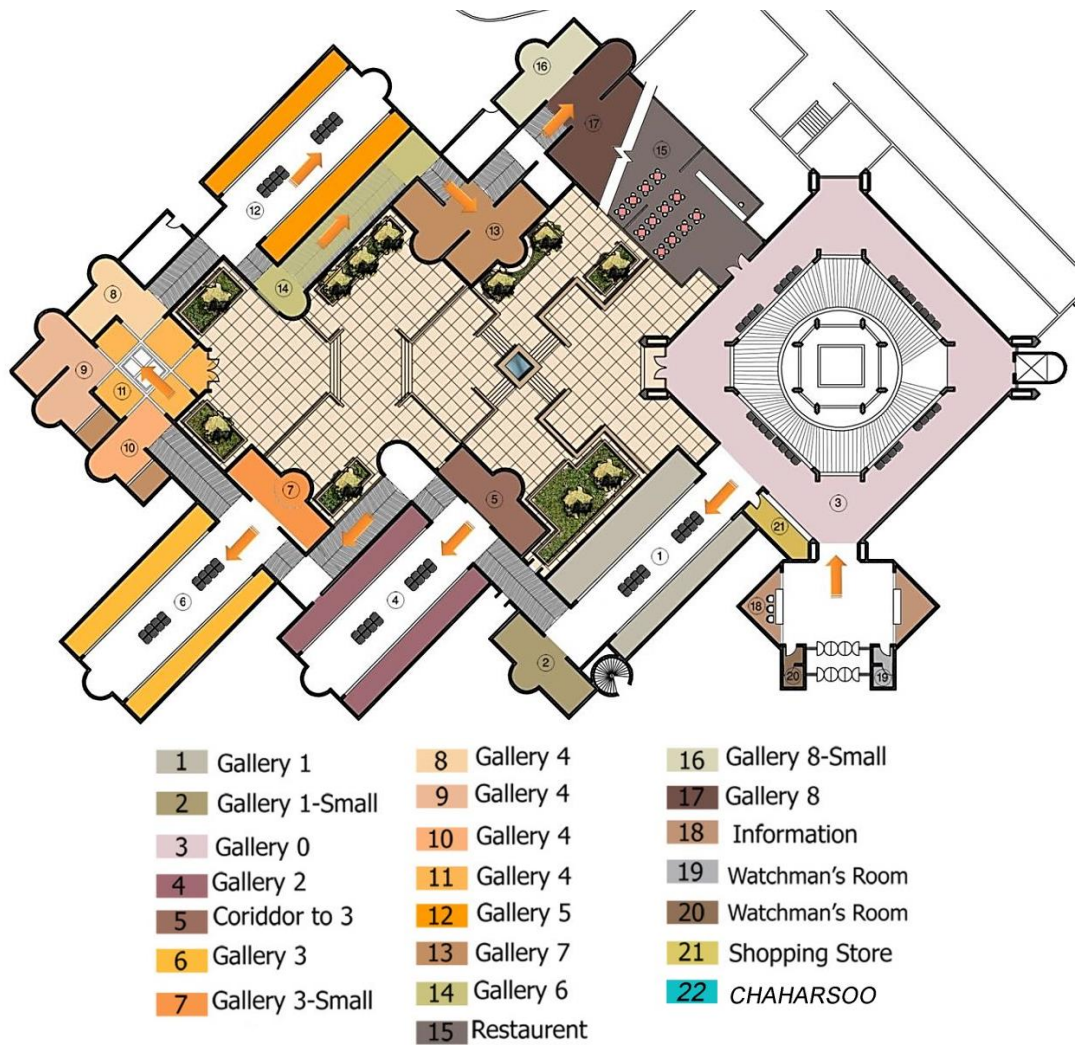


Figure 4.32: Circulation Plan (Hayatdawood, 2013)



Figure 4.33: Spiral ramp which leads to the galleries (Author, 2012)

Color and Light: Wind-catchers (Badgir), is one of the traditional architecture elements in Iran that are used in Hot and dry region in buildings. This time, wind-

catcher, that has the role of ventilation and air flow in the building, lost its function and take the function of transmitting light inside the Museum building. Direct sunlight can damage or discolor the artworks, thus, the idea is utilized to control the direct emission of sunlight on the artworks. Besides, spot light projectors are assigned as the main lighting illuminants in the building (Figure 4.34). The white color of the walls helps the light to be emitted in the best way possible.

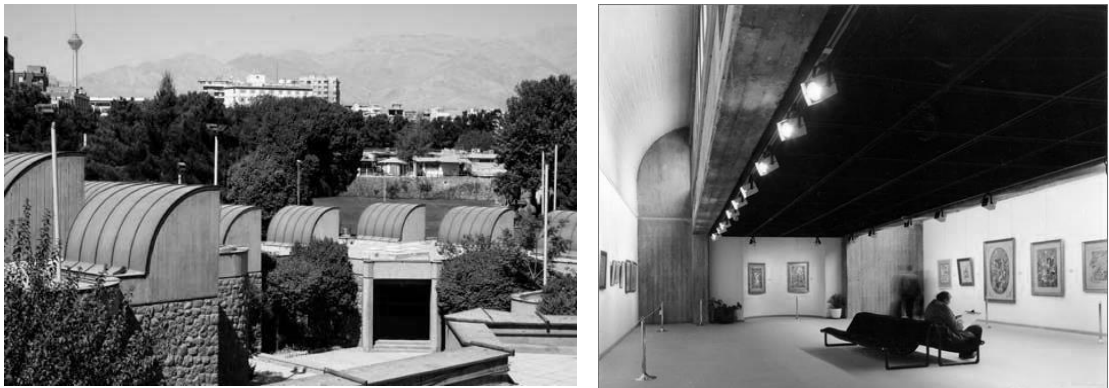


Figure 4.34: Wind-catchers (Badgir) as the day lighting sources in the building and projectors as the artificial illuminants (Tehran Museum of Contemporary Arts, n.d)

Finishing material: The building's structure is made of concrete and skylights are covered with copper in exterior part. The dominant color in the interior space is white. However, the combination of white plastered walls, some concrete walls and lamps' light gave a beige color tone to the interior space. Except the main gallery space that is covered with carpet to reduce the sound and keep the space more calm the galleries are covered with linoleum throughout the museum (Figure 4.35).



Figure 4.35: Finishing materials (Author, 2012)

Exhibition Units and furniture: most of the museum's belongings are wall mounted famous painting. As going along the galleries, artworks with different styles are installed on the walls of the galleries (Figure 4.36). Although, there are some display bases that artworks are put on them.



Figure 4.36: wall-mounted artworks, Museum of Contemporary Arts of Tehran (Author, 2012)

There is some furniture through the museum space for visitors. Some of this furniture is place in front of paintings in order to let the visitors, sit, think and discover the true meaning of the artworks. The rest are placed for visitors to rest (Figure 4.36).

Environmental factors and Security: There are many artworks including permanent and temporary collection that are exhibited and kept in the museum. These collections must be safe and secure. Check-in system starts by the main

entrance to prevent bringing food and animals and prevent the objects being theft. Surveillance cameras are embedded to control the safety of both objects and people. In case of fire, fire extinguishers are also located in accessible places around the museum space. Roof ventilation system through steel canals is used to control the temperature the entrance of direct sunlight is prevented by curved and indirect openings. In case of controlling the pests, daily and efficient cleaning system is organized. These activities are carried out to protect the museum belongings from harm, discoloration, erosion and being lost (Figure 4.37).

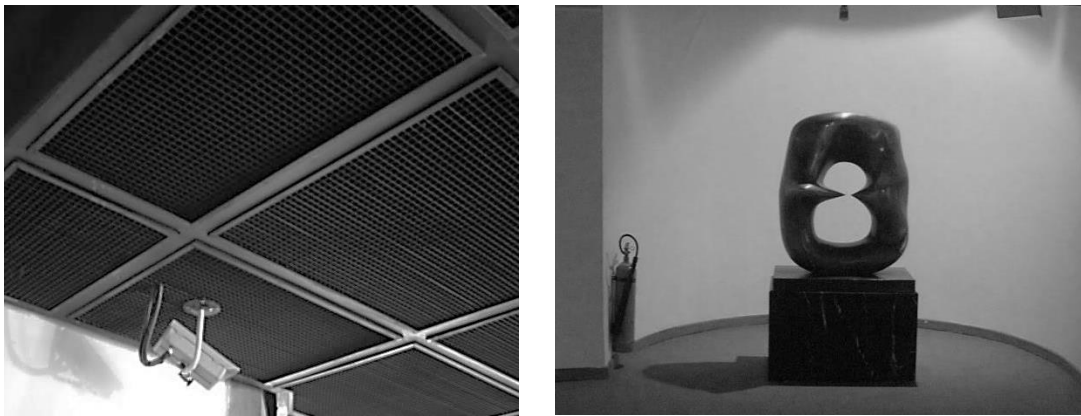


Figure 4.37: Protection and ventilation system in the museum (Author, 2012)

Style: The building is a sample of postmodern architecture with benefitting from traditional Iranian architecture. Its design follows the modern pattern in architecture. (Tehran Museum of Contemporary Arts, n.d). Cultural inspiration is well obvious in the design of the building. Wind-catchers (Badgir), Vestibule (Hashti) and four-way (Chaharsou), are some of the significant elements in traditional Iranian architecture that are utilized in this Museum. Vestibule (Hashti) that is a passage between the interior and exterior space of a building, is most of the time located right after entering the pace. Vestibule (Hashti) is one of the Iranian traditional elements in the houses to control the circulation and improve the privacy of people, who live inside especially women. In this museum, Vestibule (Hashti) is located by the main

entrance door. It is the place for check-in, which is a security section in the museum, and buying the tickets before entering the exhibition spaces (Figure 4.38).

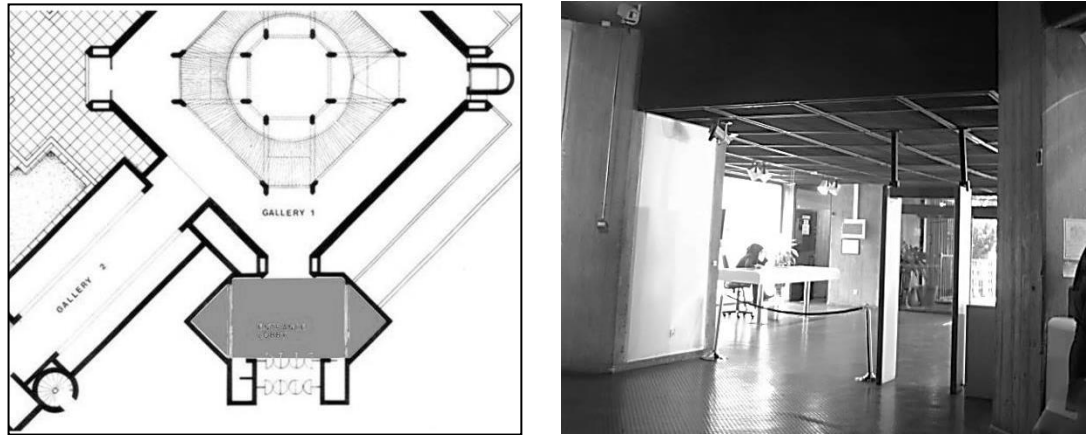


Figure 4.38: Vestibule (Hashti), check-in point (Author, 2012)

In the atrium, and at the bottom of the ramp, pond of Noriyuki Haraguchi (Noriyuki Haraguchi is a Japanese object artist and sculptor) made of steel and oil is stood. The reflection of the light into the oil reminds the Iranian pond (Hoz) (Figure 4.39). In walking through the galleries four-way (Chaharsou), which is the intersection of the passage ways can be seen (Fig 4.40). As it is unambiguous, Museum's universality is based on cultural aspect of Iran; culture and traditional architecture has a great impact in the building.



Figure 4.39: 'Matter and Mind' by Noriyuki Haraguchi, reminds of pond in Iranian architecture (Tehran Museum of Contemporary Arts, 2012)

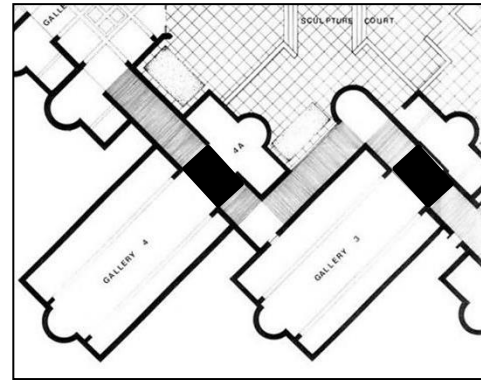


Figure 4.40: Four-way and passage way between galleries (Tehran Museum of Contemporary Arts, 2012)

4.3.2 Buildings Adapted to a Museum

In this part, buildings that were reused and redesigned to be a place of keeping contemporary art collections are set to be demonstrated. They were picked because of their recognition after their opening.

4.3.2.1 Tate Modern

Inaugurating in 2000, Tate Modern is a gallery of national modern arts and one of the greatest modern art samples today in London, England. It is placed in an existing structure, which was an abandoned Power Station (built 1947-63). Bankside PowerStation generated electricity for the whole town during 1952-81. The new collection of Tate Modern contains modern arts from 1900 to the present. These collections were kept and displayed in Tate Britain that is a smaller gallery in London. (Bond, 2000). Its architects Jacques Herzog and Pierre de Meuron, who won the project in a competition, were in charge of the building's conversion. According to the design, the building is departed into two parts; north wing with $7827m^2$ area, which has 7 floors and almost the whole permanent collections are exhibited there, and west wing, with $3299m^2$ called Turbine hall, which hosts temporary exhibitions (Figure 4.41) (Nixon et al, 2001).

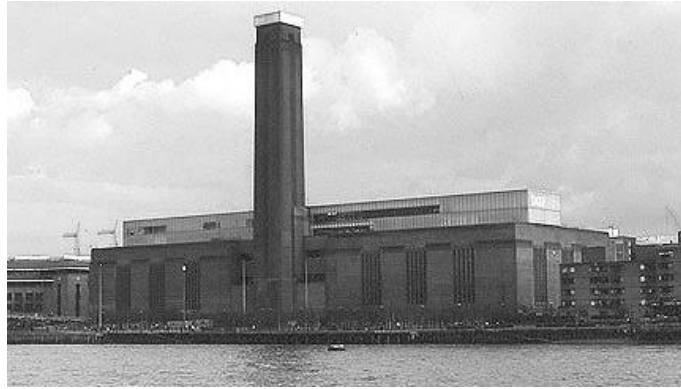


Figure 4.41: Tate Modern Art Gallery, London, England (Hatton, 2012)

Behind Tate Modern, the oil tanks belong to the original PowerStation is going to be added to the building as new Tate Modern gallery spaces. Although it is opened to public in 2012, its extension plan is still continues and it is going to be finished in 2016 (Olins, 2010). As the director of Tate Modern said, it is going to offer more space for contemporary arts specially performance art, music, projections and interaction with people. The explanatory slogan sentence is Tate 2, brings art in action to the wider public (artisatation, 2012). It has a concrete structure and the lighting fixtures are linear florescent lamps, same as main Tate gallery.



Figure 4.42: Tate Modern , London, UK (Hiu Yuen Yip, 2012)

Plan schema: The building has a long rectangular plan that is divided into two areas and has seven floors. On the west part of the building, is an entrance to the turbine hall, which is the first floor of the building and house of temporary exhibitions and some shops. North wing entrance opens to second level. The café and bar are also

located in this level. These two sides are connected with a bridge. Level three and five are allocated to the permanent collection of the museum and 3rd floor is for the temporary exhibitions. The well-known restaurant of the Tate Modern gallery is located on the last floor and has an amazing view to the city.

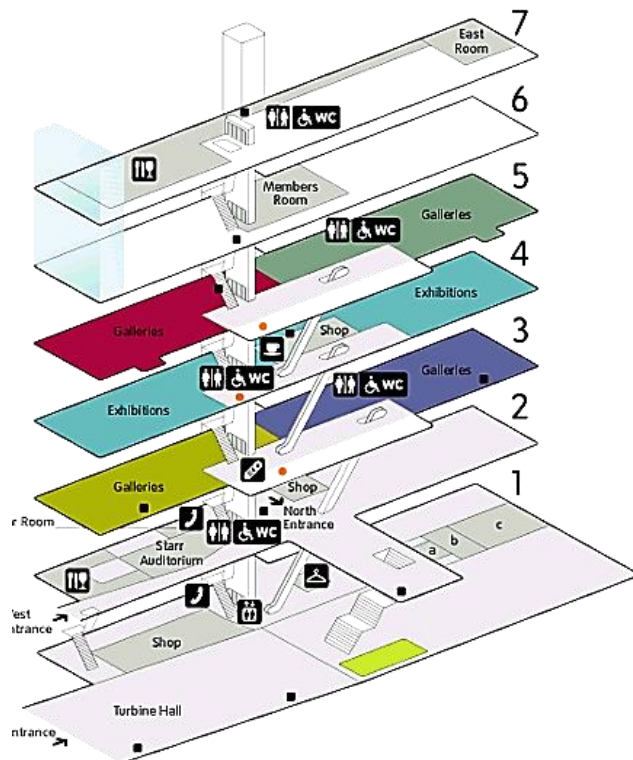


Figure 4.43: Tate Modern Gallery plan schema (Londra_Tate Modern, 2007)

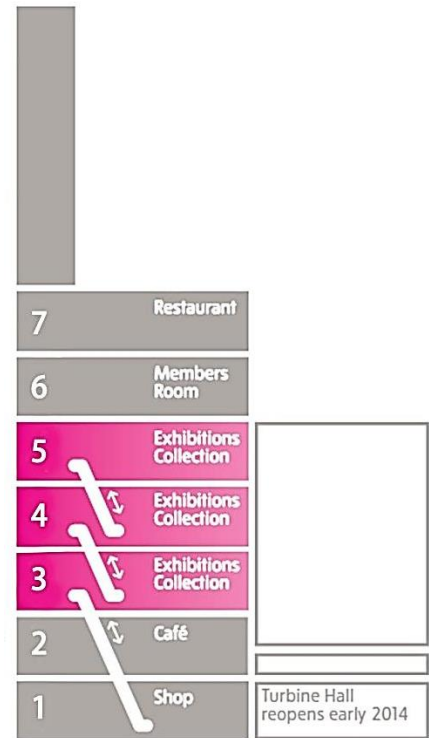


Figure 4.44: Tate modern gallery west section (Tate Modern, n.d)

Functional Arrangement, Circulation and accessibility: The whole composition in the museum space is open plan organization or unstructured approach. Turbine hall exhibition area is completely free of dividers and obstacles. However, in the galleries in the other floors, some partitions and walls are set to classify the artworks due to various styles and years. To make it clearer, for instance, the fourth floor permanent collection is consists of cubism, geometric abstraction and minimalism artworks. The idea behind Tate Modern was to make it physically comfortable for users. All the facilities such as restrooms, snack bars, elevators, bookstore and

stairways are grouped together in one area to be well accessible for visitors. Another noticeable case is that, the structure is an artwork by itself. It is not just the collections that absorb people to Tate modern, but the building itself (Smith, 2006).

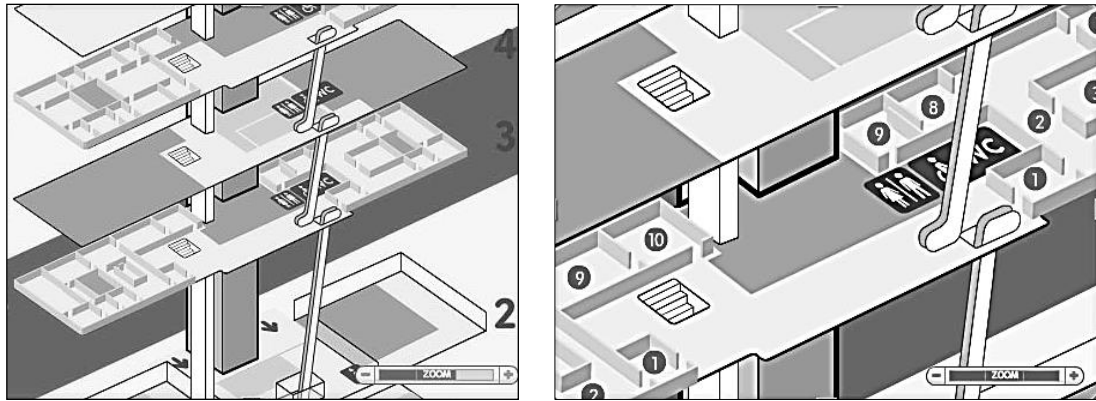


Figure 4.45: Tate Modern circulation and accessibility (Hill, 2008)



Figure 4.46: Turbine hall, Tate modern (Timotin, 2007)

Color and light: the maximum amount of light is provided by the opening on the ceiling in the main hall. However, at a glance, the total height of the galleries is more than normal. The ceiling is about 4-5m height and although there are some galleries with openings, most of the rooms are artificially lit. Neon light arrangement is the dominant luminaire in Tate Modern. As going up to the other levels, clerestory

opaque windows get visible. They let the day light emitted softly on the interior walls of the museum (Tate modern, 2011). There are huge opening in the last level of the building, where the restaurant is located. It gains the benefit of day light and has a great view to the city that attracts many people. The color theme of the galleries is neutral color in order to not affect the works of art. However, different tones of color are used for titles and numbers on the walls and staircases are covered with dark colors and lightened with hidden lights (Bond, 2000).



Figure 4.47: Ceiling opening in Turbine Hall, Tate Modern (Schittich, 2009)



Figure 4.48: Hidden light of staircase and neon light (Schittich, 2009)



Figure 4.49: Use of Fonts and Numbers to Emphasis, Tate Modern (Tate modern, 2011)



Figure 4.50: Clerestory opaque Windows, Tate Modern (Tate modern, 2011)

Finishing material: the brick façade and metal framework are the base materials. The floor is covered with two main materials. First one is the oak wood that looks fantastic. It absorbs sound and adds old feeling into the exhibition halls and the other one is polished concrete that remained from the Power Station (Figure 4.51 & 4.52) (Smith, 2006).

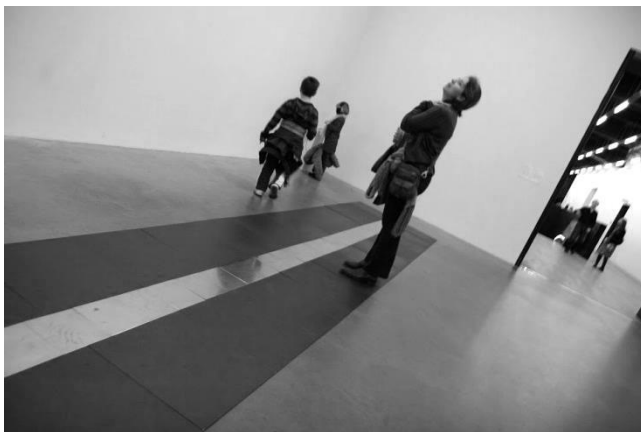


Figure 4.51: Polished concrete, furnishing material at Tate Modern (Timotin, 2007)



Figure 4.52: Oak wood, finishing material at Tate Modern (Timotin, 2007)

Exhibition Units and Furniture: Tate modern is a place that combines all kinds of modern art together and adapts itself with the art that is exhibited. Different types of display units can be seen with the exhibitions; Even the permanent collection

contains variety of art style. Installation art samples are one of the most available types of arts that can be seen in Tate Modern area. Other types are wall mounted artworks, objects that are installed on the self-standing central display bases and simple display bases for non-sensitive collections.

Wooden benches are placed in the museum space for visitors to think, focus and rest. These benches are seems as if merged with the floor material. It can be considered that the curators and designers tried to neutralize the effect of any external object and make it as unnoticed as possible.



Figure 4.53: Display units and furniture, Tate Modern (Olins, 2010)

Security: safety of the collections and people are provided with a pre-defined plan. There are at least two entrance doors in areas that are not designed as open plan. Each room has an exit sign that is in green and fire alarm boxes are installed on the walls of the building to be utilized at the risky time. A well-organized housekeeping program is an essential point in preventing the fire (Liston. Et al, 1992). In case of collections, small fences are assigned forepart of mounted artworks to remind the visitors to be more cautious about them. In addition, surveillance cameras are set in the galleries to protect the artworks from being theft or lost (Figure 4.54).



Figure 4.54: Tate Modern, interior space (Arpingstone, 2007)

Environmental factors: Efficient maintenance program is one of the most vital points for the museum's environmental health. Tate modern has a neat environment and its good housekeeping plan is evident. Controlling the sun emission to the upper galleries is provided by the clerestory windows and roof opening in the main hall. There are some openings on the permanent collection's rooms that supply the room with natural light. However, there are sealed in order to control the Relative Humidity and temperature. One variance of Tate Modern and other reused museums that has been analyzed in this thesis is its ventilation system that is on the floor. Each room has separate canals on the floor that moderate the temperature through the interior space of galleries (Figure 4.55) (Olins, 2010).



Figure 4.55: floor ventilation system, Tate Modern (Olins, 2010)

Style: the Swiss architects of Tate modern incorporated Art Deco (influential movement during twentieth century. It involves with the daily life and technology.) and modernism. They described the museum project as the ‘building of 21st century’ (Herzog and Meuron, 2013). The message behind Tate Modern is ‘look again, think again’. There wanted to be a hospitable place for every people and every day. It is a great street beside the galleries and inside the gallery hall. It was supposed to be a usual place for people to come and spend time, not only an exhibition area. In other word, it was about to be a transitional space between the streets and being inside a gallery (Olins, 2010).

.4.3.2.2 SCAD Museum of Art (Savannah College of Art and Design)

SCAD Museum of Art opened its door to public in 2002 as a part of Savannah collage of art and design. It is located in Savannah, Georgia, that is known as one of the best designed cities in America. The building was used as a ship warehouse in 1853 and the headquarter of the Georgia railway in 1865. It is a teaching museum. The museum’s permanent collections is consists of Walter O. Evans collection of African American art and culture that is one of the largest collections of its kind in America, Earle W. Newton collection of British art, 19th and 20th century photography collection and Andre Leon Talley gallery that is devoted to fashion and

style and contains costume collection (SCAD museum of art, n.d). Periodical exhibitions are also established in the museum building. The whole area consists of the museum building, the garden and its street scape, is approximately 7618 m², and the infrastructure area is 6038m² (Architect, 2012). Christian Sottile is the lead architect of the revitalization project. His concept was preserving the old and beautiful appearance of the industrial building by developing the architectural aspects of it through simplicity and clarity, contemporary design features, regional culture and functionality. As the building is the oldest railroad structure in the United States, the main idea was to retain its structure by adding the new technologies and architectural trends to be appropriate for art museum and art institution (Architects and Artisans, 2011) (Fodor, 2013). At the north side of the building, there is a newly attached tower composed of glass panels. It can be seen from the lobby inside the museum (Figure 4.56).



Figure 4.56: Savannah College of Art and Design (SCAD museum of art), Georgia, USA (Joel, 2011)

Plan Schema: the building has a rectangular plan composition. After restoration, a mezzanine floor added into the building. Education suits, art studios and part of collections are located on the upper floor and galleries, lobby, shop and auditorium

are located in the ground floor and exhibitions are holding here. The 26 meter tall steel and glass lantern is the emblem of the building and it is the first perspective that is in front of the visitor's sight. It was designed and added into the building in order to redefine the city skyline (Figure 4. 57) (SCAD museum of art, n.d).

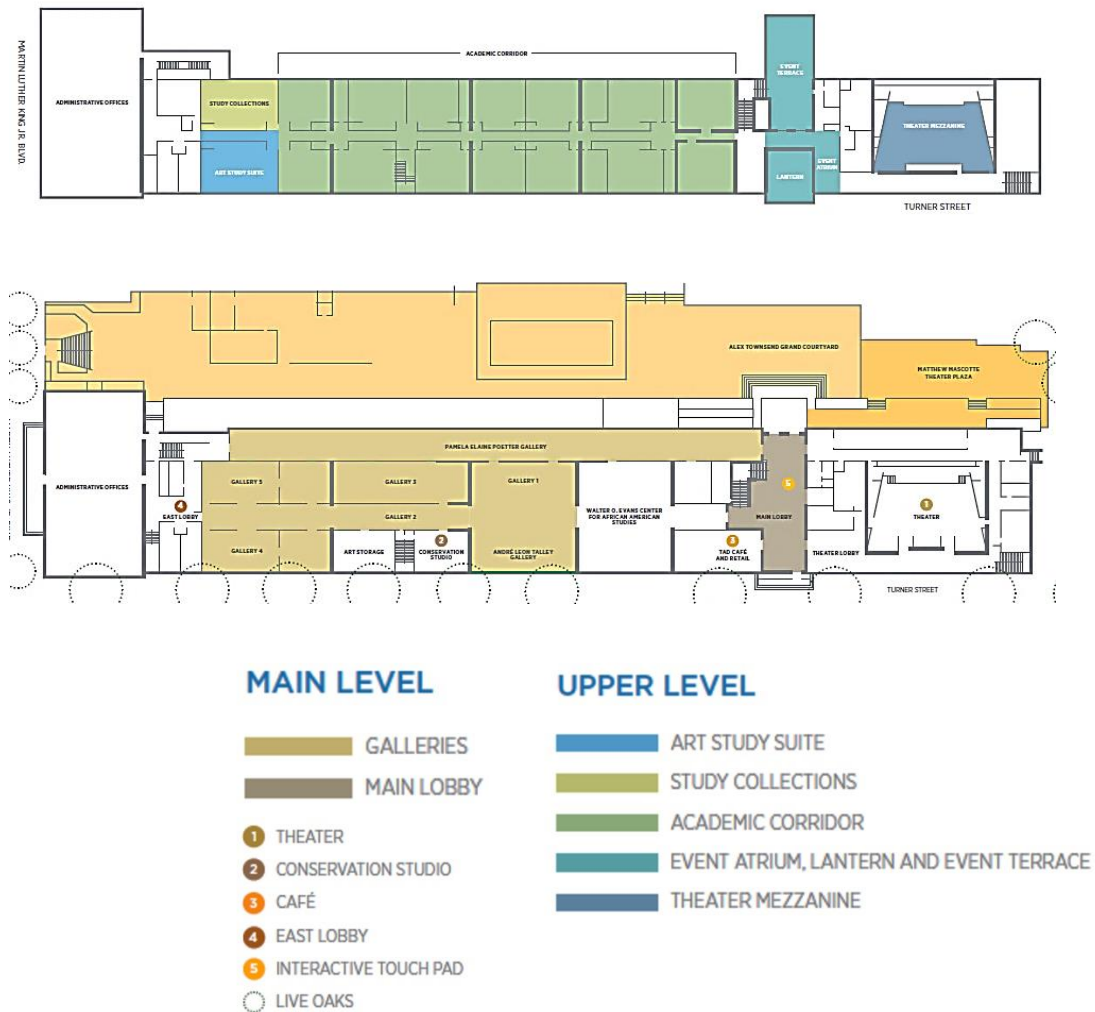


Figure 4.57: Savannah College of Art and Design (SCAD museum of art) plan (SCAD museum of art, n.d)

Functional Arrangement, Circulation and accessibility: the main entrance split the building into two parts; the east side that is the main entrance of the building consists of galleries, studios, class rooms and permanent collection. An interactive touch-screen guide table is located in the lobby to share information with visitors

(Figure 4.58); and west side lead to the 250-seat auditorium. Galleries are planned in an open plan organization. There is a passage through the main lobby along the galleries to the end of the building. It is marked by a lantern, which is a vertical element that reinforces the building visually and role as a block division in the horizontal plan of the building (Figure 4. 58).

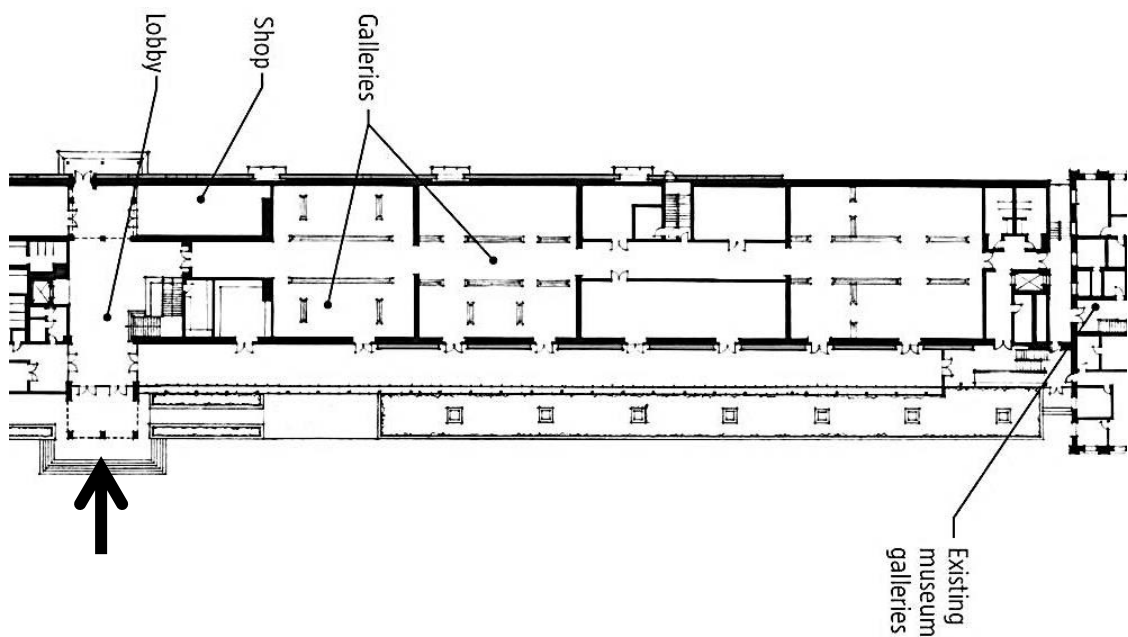


Figure 4.58: SCAD Museum of art circulation plan (SCAD museum of art, n.d)



Figure 4.59: Interactive touch-Screen Guide table in the Main Lobby, SCAD Museum of Art (SCAD_4_EMBED, 2012)



Figure 4.60: Pamela Elaine Poetter Gallery (Architect, 2012)

Light and color: Controlling the natural light is one of momentous factors in the museum building design in order to protect the sensitive objects. One of the main galleries in the museum, that is approximately 88 meters long and serves as the second circulation path, has a floor-to-ceiling glass opening that fill the whole area with natural light. This gallery is suitable for the installations that don't get harmed with natural light. In order to control the destructive effect of light emission, louvers are installed on the glass openings. In the academic wing, clerestory windows are located to recall the original building. These clerestories scatter the light smoothly into the rooms. Other galleries that are light-controlled, have roof rails to be able to relocate the light fixtures due to different exhibitions (Architects and Artisans, 2011).

The dominant color in the building is white but utilizing pink tone colors and wallpapers right after entering the main lobby as motivating colors are obvious and noticeable.

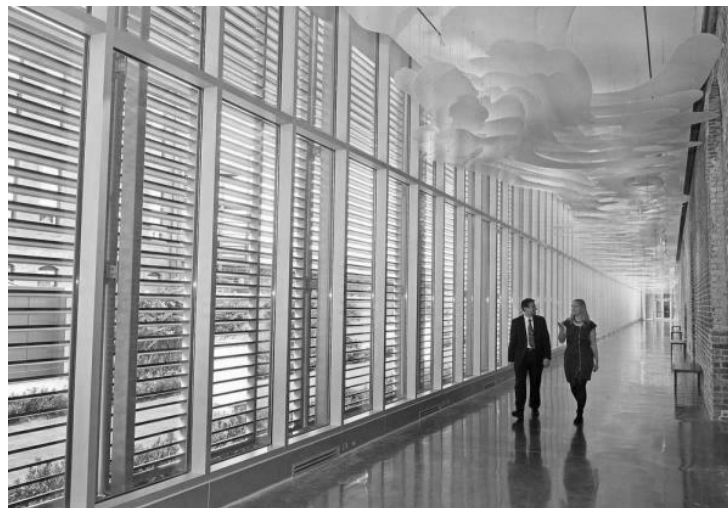


Figure 4.61: SCAD Museum, Pamela Elaine Poetter Gallery (SCAD Museum of Art Featured Artists, 2013)



Figure 4.62: roof light fixtures, SCAD Museum Interior Space (SCAD Museum of Art Featured Artists, 2013)

Furnishing material: the effort to preserve the old value of the railway depot and enhance its contemporary phase simultaneously, terminated to a juxtaposition of old and new construction material. Sustainable materials were used by designer and architects and also, energy-saving technology was utilized (SCAD museum of art, n.d). The original brick walls have been restored to preserve the old character of the building. Concrete, glass and steel have been utilized as new materials to overcome the need of modern museum building. The timber which was used formerly in the building is reused in the revitalized building to conserve the natural resources (Architects and Artisans, 2011).



Figure 4.63: SCAD Museum of Art exterior view (SCAD Museum of Art Featured Artists, 2013)



Figure 4.64: SCAD Museum of Art interior view (Angel Otero: Material Discovery, 2013)



Figure 4.65: Building condition Before revitalization. Most of timbers are used in reused in new function (Architects and Artisans, 2011)

Exhibition Units and Furniture: permanent collections of the museum are exhibited as wall-mounted paintings, objects that are installed on the display bases and self-standing central units. There is an interactive table in the main lobby that help the visitors explore the permanent collection and exhibitions in the building.



Figure 4.66: Display units in SCAD Museum, Savannah, Georgia, USA (SCAD Museum of Art Featured Artists, 2013)

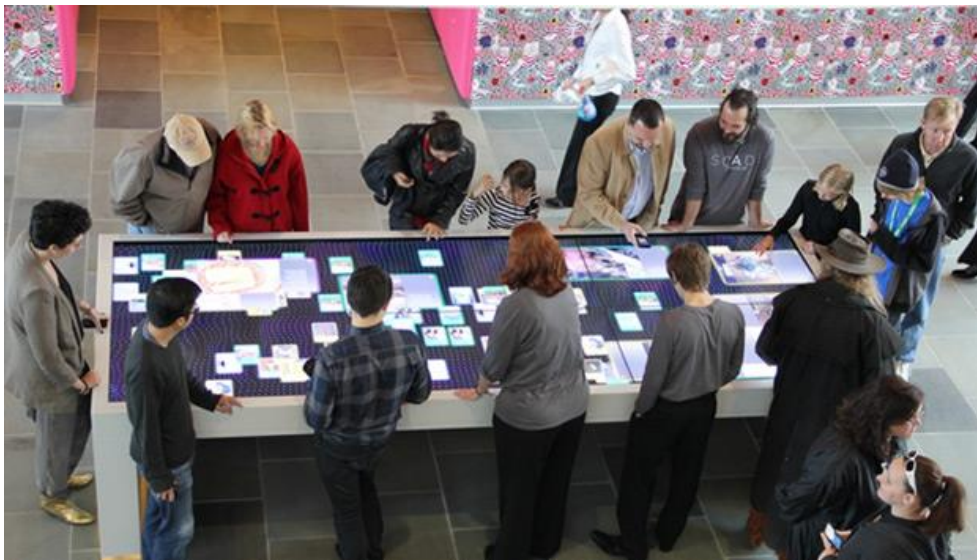


Figure 4.67: Interactive table, SCAD Museum of art (Eddie Opera, 2012)

Furniture in SCAD has an identity that relates them to the museum space. There are two outstanding types can be seen; one of them made with the SCAD fonts and another one in an interactive bench that change its color digitally when it is touched.



Figure 4.68: SCAD Museum benches

Security: In order to reduce the probable risks, each area has minimum two exits that are specified with a green light box, visible in every time of the day and night. In the upper floor, where the academic studios are located, three stairs are embedded that lead to one of the exit doors in ground floor.

Delicate, vulnerable or important collections have a small barrier that make them more secured from unintentional damages that may happen. Surveillance cameras are installed in the galleries to monitor the collection.

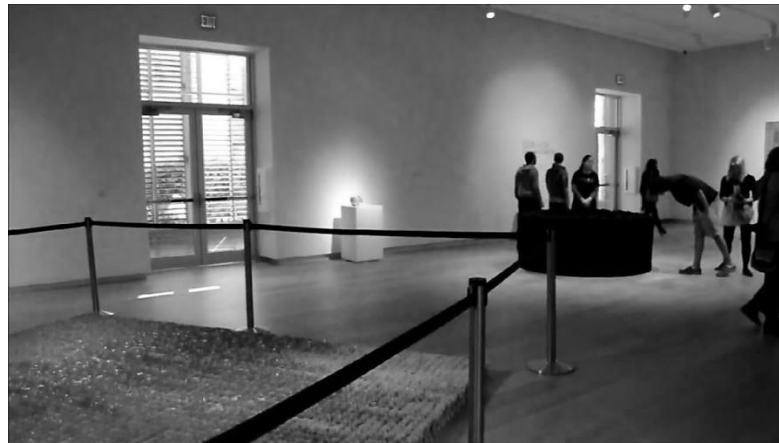


Figure 4.69: Exits and Barriers in SCAD Museum of art (SCAD Museum of Art (Savannah College of Art and Design, 2011)

Environmental factors: the architect of the museum believes that the museum design has used the very best low consumption, durable and timeless materials and technologies that make the building sustainable for next generations. Original high ceiling helps the optimal temperature regulation inside the museum. Sun emission is controlled by shelters; cooling lantern (tower) that has also a symbolic role helps the building be more ventilated. The museum utilized on-site storm water mitigation, water conserving system, high thermal performance. High efficiency ventilating system is provided with large insulated pipes that are placed beneath the main roof and new-installed ceiling (Architects and Artisans, 2011).



Figure 4.70: ventilation system beneath the ceiling, SCAD Museum of Art (SCAD museum of art, n.d)



Figure 4.71: Vicinity of New and Old Material in the Museum Structure (SCAD Museum of Art Featured Artists, 2013)

Style: the revitalization project has a deep root in the context. The site is one of the national landmarks with a great history that should be preserved, due to the fabric of Savannah as a historic city and the ability of adaptation to the new function that is the art and design college. The new building is the mixture of old and new. An urban adaptive-reused project still can be named as a historic site, which kept its original identity (Architects and Artisans, 2011).

4.3.2.3 Istanbul Modern

Istanbul Museum of Modern Arts is the first private museum in Turkey that is devoted to contemporary arts. It was initiated in 2004 on the shore of Bosphorus by rich Eczabaşı family, who were intrigued by arts. The initial thought was to display the finest sorts of arts from around the world and promote the social, national and creative possessions of the country. The name of the museum likewise conveys the idea of modernity. It is placed in nearly 8000 square meters zone that was used as the ship warehouse in Galata pier, which was a sea gate of the city for quite a while (Polo, 2013). It was redesigned and adapted by Melkan Tabanlıoğlu, who is a really popular architect in Turkey. It holds the permanent collection of modern and contemporary art and temporary exhibitions (Figure 4.72).



Figure 4.72: Istanbul Modern Museum, Istanbul, Turkey (Arolat & Grima, 2012)

Plan schema: Since Istanbul modern is a redesigned site from a ware house to a museum, it owns a basic simplicity. The main architectural criteria for the building were the minimum use of interferences to emphasis on the artworks and make them stand out. According to this criterion, the light grey became the base color for the building.



Figure 4.73: Istanbul Modern during the restoration (Istanbul Modern Library catalogue, accessed in 2012)

The museum contains two floors. The upper floor consists of permanent. It shows the Turkish modern and contemporary arts from the beginning. It has also a small area of exhibition in the same floor, for works of modern art from around the world. The artworks vary in type; from painting and sculpture, to video and installation arts (İstanbul Modern, n.d). Meeting rooms, restaurant and museum shop are also located in this floor. The lower floor holds the temporary exhibition area, cinema, offices and library. Modern arts such as architecture, design, video, new media and photography are some of the exhibitions that are held in the lower floor temporarily (Figure 4.74) (Tabanlıoğlu Architects, 2010).

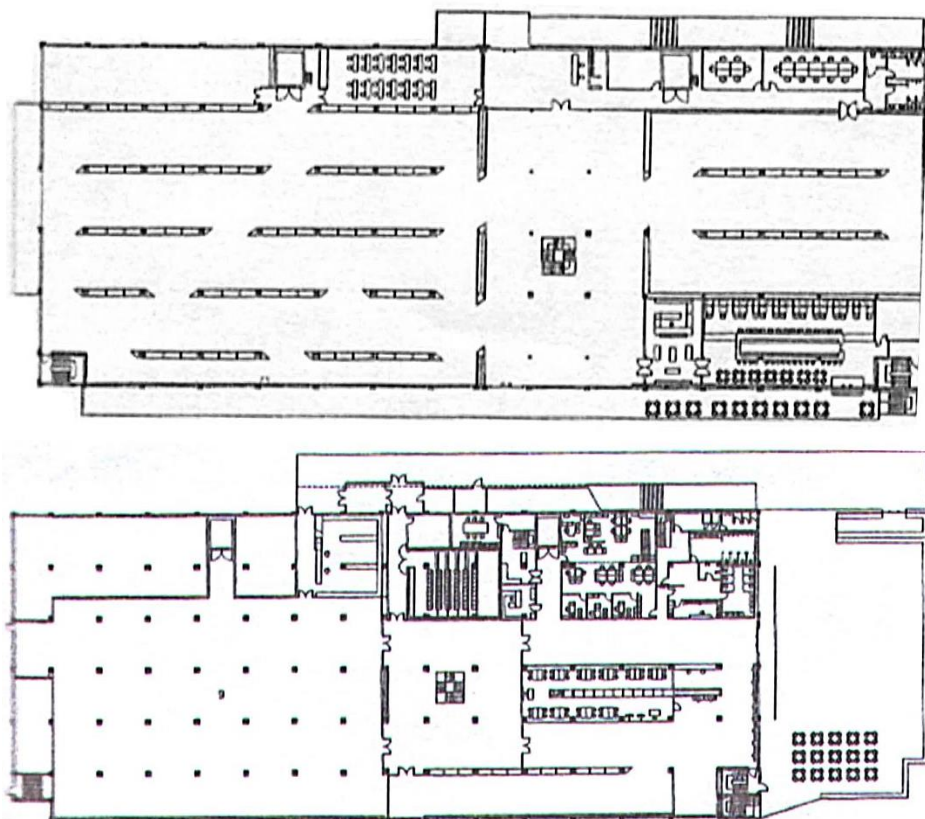


Figure 4.74: Istanbul Modern Plans, up: first floor, down: ground floor (Istanbul modern Library Catalogue, accessed in 2012)

Functional Arrangement, Circulation and accessibility: The main entrance to the building has a low slope ramp that leads to the first floor (Figure 4.75). Information

desk, locker room and museum shop are located right after entering the first floor. It holds permanent collections that are exhibited in a chronological organization. Although there are a chronological relation through the museum between the artworks, the circulation paths is designed in an unstructured approach template. Orientation is up to the visitor's choice. Partitions are the main dividers in the museum (Figure 4.76).



Figure 4.75: entrance ramp, Istanbul Modern Museum, Turkey (Author, 2012)



Figure 4.76: Interior Design Organization, Istanbul modern Museum , Turkey (Istanbul Modern Library catalogue, 2012)

The restaurant is located in the first floor. It is designed with the updated ottoman motives and a terrace that has a prospect to the sea (Figure 4.77). On the way to the lower floor, visitors should pass on the hanging staircases. This staircase that is called ‘stairway to the hell’ and has a steel structure, chains, laminated glass and spot light, was installed in 8th International Istanbul Biennial in 2003, before the museum's opening. However its reputation made it as an annex in the museum's belongings (Figure 4.78) (Kilic, 2013).



Figure 4.77: Restaurant in Istanbul Modern, (Istanbul Modern Library catalogue, accessed in 2012)



Figure 4.78: Istanbul Modern Staircase, Monica Bonvicini (Kilic, 2013)

Color and light: large openings consume the natural light for the building. However, not all the museum interior sections receive the day light. Furthermore, artificial lighting is the dominant lighting system in the museum area. The light grey and white color of the walls and partitions assists the interior space to be brighter. In addition, the grey color tone of the walls and floors conduct the concentration on the mounted artworks (Figure 4.79).

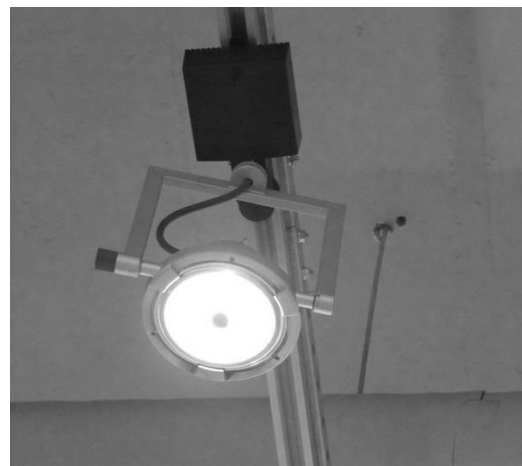


Figure 4.79: color and light condition in Istanbul Modern Museum (Author, 2012)

Finishing material: Since Istanbul Modern is a restored warehouse building; the base material is concrete and steel columns. After adaptation, vacuum concrete

floors, exposed services, large glass openings, transparent glass partitions and grey and white walls are the materials that can be seen in the museum area (Figure 4.80) (Istanbul Modern Library catalogue, accessed in 2012) (Tabanlıoğlu Architects, 2010).



Figure 4.80: Istanbul Modern Interior, upper floor (Tabanlıoğlu Architects, 2010)

Exhibition Units and Furniture: Istanbul modern tries to act as a neutral space that doesn't influence the identity and notion of the artworks. The upper floor contains the permanent collection. This collection mostly consists of paintings that are mounted on the walls. In the lower floor, temporary exhibitions are held and the display units alter due to the exhibited artworks. There are some rectangular benches through the museum space by the walls or in front of artworks for visitors.

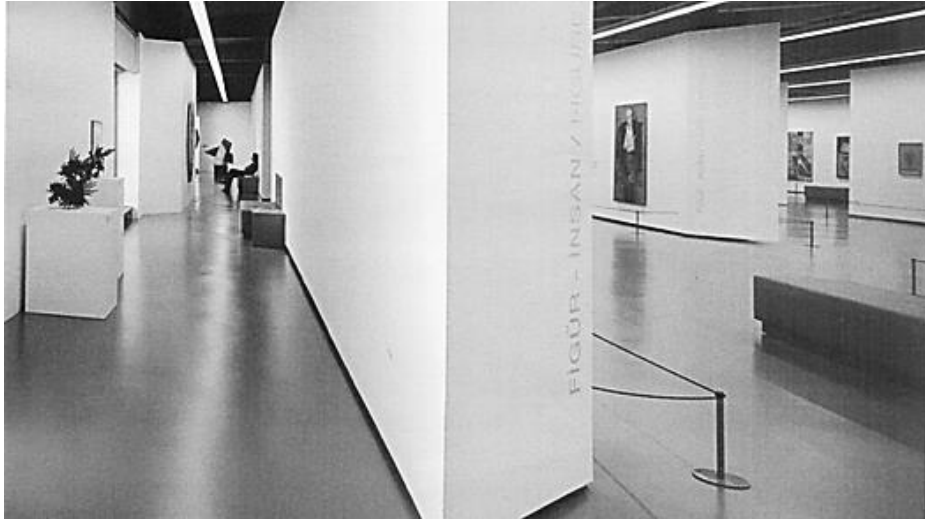


Figure 4.81: Istanbul Modern's upper floor (Tabanlıoğlu Architects, 2010)



Figure 4.82: Istanbul Modern's lower floor that hosts temporary exhibitions (Istanbul Modern Library catalogue, 2012)

Security: In terms of security, it can be said that it has a high range of protection. Entrance control room, even before entering the museum site, is the first encounter for the visitor. By entering the museum, check-in point and ticket counter can be seen and a glass partition is the discriminant of museum area and outside. Security team personnel walk around and watch over the safety of the artworks. There are also barriers for artworks to specify a limitation for visitors and remind them about the collection's importance.

Environmental factors: Istanbul Modern has large glass openings that provides the day light for interior space. Shelters and walls are assigned in order to reduce the bad effects of sun emission. Ventilation system is provided by exposed steel canals on the top that help the interior area be more proper for both people and collections. Since the main permanent collection of the museum is paintings, taking photos with flash is prohibited inside the museum. Besides, the general rule is set to ban the photograph taking and bringing the food and animals inside the museum.

Style: It has a great role in Istanbul Modern. It is the mixture of tradition and modernity in the city which it is a medium between modernity and culture itself. The building is constructed under a modern pattern, but it uses Ottoman Motifs in an updated type. It is visible mostly in the museum's restaurant. Besides, to show the Turkish art to the world, the main part of the museum's collection is contains of Turkish artist's works.

4.4 Inventory Tables

To better understand the cases and their design-related features, six tables have been invented. Each of these tables contains brief information about the cases that have been analyzed in detail beforehand. They put in the order of their categorization. First three tables are the original museums and the other three museums are adaptive reused type. They are placed at the end of this chapter.

Case studies are analyzed in detail due to the interior design characteristics of contemporary art museums. These are the well-known museums that have some paramount characteristics among others. In the next chapter, all the discussed issues are going to be summarized and concluded.

Discussing about the interior design of museum buildings is a vast debate and it can't be explored in the framework of this thesis. Hence, contemporary art museum is chosen to be the main concern of this study. Although, it is also a debatable area and needs lots of research. As stated in the inventory tables previously, the chosen case studies that are analyzed in two groups, have some similarities and differences, flaws and advantages. Obviously, there are some general rules and design characteristics, which are common in all museum building's types that help the museum, be more popular and helpful. For instance, check-in point and surveillance cameras can be seen in almost all museums. But the focus of this study is on the features that are more important for contemporary art museums. With the basis of this information, some of the most significant factors are analyzed. In comparison that is done on case studies, open plan organization is mainly used because of the variety of option in organizing the interior space, due to the needs of the exhibiting objects. Another significant character in these museums is the utilization of daylight and its interaction with artificial lighting inside the museum. The main effort is to obtain as much daylight as possible. In other word, natural light helps the artworks to express their real concept to the visitors in the best way possible. On the contrary, there are some sorts of artworks that can be harmed in subject to the sun light. In this case, some areas in the museum space are illuminated with artificial lighting to reduce the amount of damage. But, the both illumination types are necessary for museum building and their effect cannot be ignored. So, the sun emission is controlled and efficient artificial luminaires are installed. Walls and partitions in the museum space are mostly covered with light colors such as white and light grey. As the background of the artworks gets neutral, the artworks can be more emphasized. Besides, for safety of the artworks and visitor's comfort, well-equipped air conditioning system is

installed in the museums. In additions, because of the delicacy of the art collections and their importance, fire protectors are assigned in different ways through the museum space.

Selected contemporary art museums, by the date of their construction, are designed and constructed after 1920s, that modernism era was begun (Hitchcock & Johnson, 1995). Thus, modern materials and reusing old materials can be seen generously in their design. Almost all of these cases have concrete and linoleum in their construction. They are utilized in both new and recycled way.

4.5 Summary of the Chapter

In this chapter, evaluation of museum in different regions is written and accordingly, case studies are analyzed in detail in two groups. In the first category, there are three museum that are originally designed as museums and other three cases are building adapted to a museum. On the basis of this analysis, inventory tables are made for each museum. At the end, these museums are compared to each other due to the detailed analysis in another table and the result is written according to the last table. Continuously, due to the information given in this thesis, the result of this research is explained in the next chapter as a conclusion.

Chapter 5

CONCLUSION

Museums have a long history. Although, there were some alterations in their type, form and location, their functional role is always constant. Their main aim is to conserve and exhibit variety of objects and artworks. In this thesis, contemporary art museums are analyzed due to some of the important interior design characteristics, that are functional arrangement, circulation and accessibility, light and color, finishing material, exhibition units and furniture, security, environmental factors and style.

The analysis is done on two groups of museum building that are originally designed as museum and adaptive-reused type of museum buildings. Moreover, mentioned interior design features of these groups were explained broadly. At the end of the analysis, case studies have been compared to each other due to their interior design characteristics in inventory tables.

The research objective of the thesis is to specify the best conditions for collections and people in the museum space and have a survey on all the effective interior design features inside the museum building. According to the analysis, there are some similarities and differences between the common factors in each category. Light conditions in the museum space, the organization of the artworks and plan, the utilized material in the museum space, exhibition units, safety of objects and people,

the environmental condition and the familiarity of the design with the location, explained and compared in this research. The reason of this comparison, is to derivate a common regulation and design procedure that is applied to the selected cases. The result can be considered and expanded for all museums with these considerations. Besides, there are some differences between the museum buildings themselves. In originally designed as museum buildings, circulation and accessibility could be designed more freely. It means that, it could be organized from the scratch by designer. There are different ways of circulation according to the basic design idea and it is more possible to reflect the culture of daily life nowadays. However, adaptive-reused type of museum, are more sensitive about the alterations. There are some limitations in a historic building or a valuable renewed building that is going to be utilized for another function. In other word, some rules are set to conserve the historic value of the adaptive-reused buildings. In case of need, some additional parts are attached to the building to cover some of the requirements of new function and parallel, save the original building from being destroyed or valueless.

The research is done through literature survey. Reliable resources, such as books, scholarly articles and trustworthy websites are used to gather the information. Field study was done on the cases via observation, photography, documentaries and online resources. How museum space evolved and come to this end has been reviewed in literature survey part of the thesis. Six cases are selected from different countries due to their reputation among people and to rely on related authoritative researches and categorized in two groups. Selected cases of originally designed museums are Solomon R. Guggenheim Museum, Pompidou Center and Tehran Contemporary Art Museum, and the adaptive-reused types of museums are Tate Modern, SCAD Museum of Art and Istanbul Modern.

According to the literature review of the study, conserving objects was considered seriously during the history in different ways. People keep their precious objects and utilized them for various reasons. It indicates that tendency of conservation is institutionalized among people regardless of time period.

The study emphasized on the importance of interior design on the visitors and museum's authority. Confirming to this, disregarding the role of these factors in the museum design and construction, can cause irrecoverable problems for museum's authority, belongings, stability and even visitors of the museum. It also discussed that an integrated and efficient interior design can influence the whole world and attracts permanent visitors and supports the museum to stay open.

This thesis is an almost comprehensive source for those who tend to have a survey on the museum field, especially contemporary art museums and the interior design features that have vital effect on the efficiency of museum buildings. It is also an efficient resource to study about the differentiation of museum building types, which are originally designed museums and adaptive-reused types of museum. Interior design characteristics that are covered throughout this thesis are functional arrangement, circulation and accessibility, light and color, finishing material, exhibition units and furniture, security, environmental factors and style.

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Table 4. 1 Solomon R. Guggenheim Museum


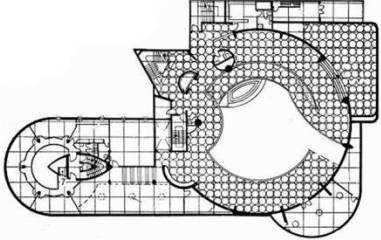
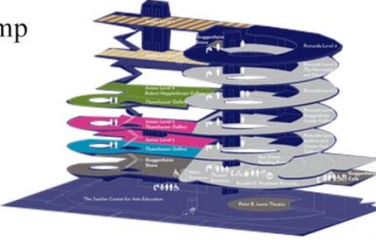
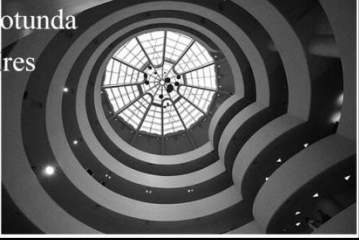

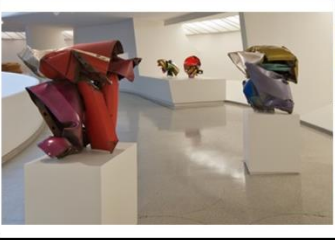

Solomon R. Guggenheim Museum	Location: New York, USA	Architect: Frank Lloyd Wright	ORIGINAL 01
	Construction date: 1943-1959	Extension date: 1992	Style: Modern
General View	Plan schema	Functional Arrangement, Circulation and Accessibility	
		<p>Continuous ramp Spiral form</p> 	
Color and Light	Finishing Materials	Exhibition Units & Furniture	
<ul style="list-style-type: none"> • Day lighting in rotunda • Exposed luminaires • White walls 	<ul style="list-style-type: none"> • Reinforced concrete • Shotcrete • Lightened concrete • Suspended plaster • Matt glass 	 	
Security	Environmental Factors	Style	
<ul style="list-style-type: none"> • Surveillance cameras • Check-in desk, information desk • Fire alerts, auto sprinkles • Guiding signs, exit indicators • Small barriers for artworks 	<ul style="list-style-type: none"> • Control the direct sun emission by matt glasses • Air conditioner system 	<ul style="list-style-type: none"> • International Style 	

Table 4. 2 Pompidou Center


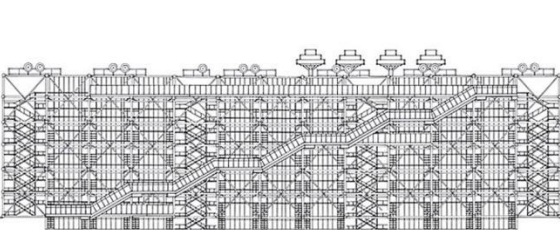
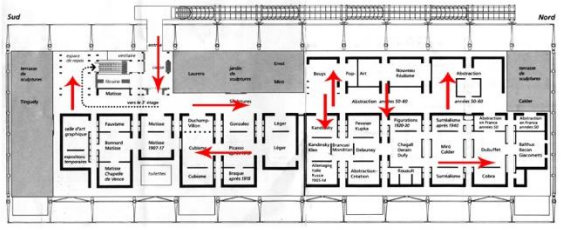






<h1>Centre Pompidou</h1>	Location : Paris, France	Architect : Renzo Piano, Richard Rogers	ORIGINAL 02
	Construction Date: 1971-77	Area :105218 m ²	Style : High-tech
General View	Plan schema	Functional Arrangement, Circulation and Accessibility	
			
Color and Light	Finishing Materials	Exhibition Units & Furniture	
<ul style="list-style-type: none"> • Artificial lighting • White walls 	<ul style="list-style-type: none"> • Linoleum floor covering • Steel and Glass structure • Exposed services • Wooden and metal - partitions with plaster covering 		
Security	Environmental Factors	Style	
   <ul style="list-style-type: none"> • Fire protection • Check-in point • Exit signs • Visual fences • Surveillance cameras • Guide map 	<ul style="list-style-type: none"> • Control the direct sun emission • Good cleaning program • Roof ventilation system, by steel canals • Prevent entering food and animal inside 	<ul style="list-style-type: none"> • International style 	

Table 4. 3 Tehran Museum of Contemporary Arts


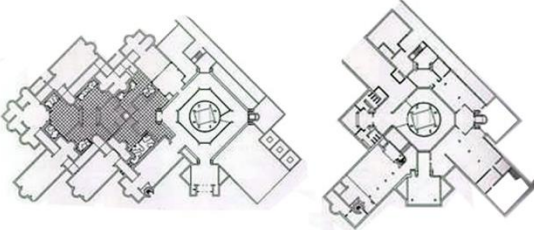
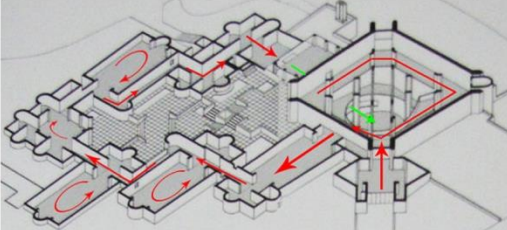



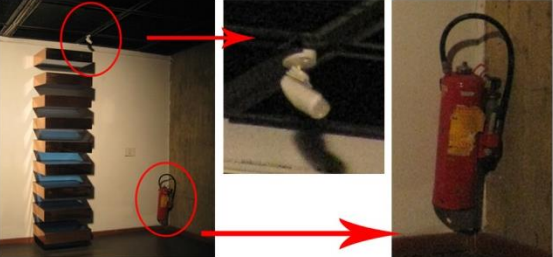

<p>Tehran Museum of Contemporary Arts</p>	<p>Location : Tehran, Iran Construction Date: 1977</p>	<p>Architect : Kamran Diba Area :15000m²/ Building: 5000m²</p>	<p>ORIGINAL 03 Style : Post modern</p>
<p>General View</p>	<p>Plan schema</p>	<p>Functional Arrangement, Circulation and Accessibility</p>	
			
<p>Color and Light</p>	<p>Finishing Materials</p>	<p>Exhibition Units & Furniture</p>	
	 <ul style="list-style-type: none"> ● Linoleum, carpet, concrete, plaster 		
<p>Security</p>	<p>Environmental Factors</p>	<p>Culture</p>	
	<ul style="list-style-type: none"> ● Control the direct sun emission by windows in wind-catcher shape to reduce the temperature ● Good cleaning program ● Roof ventilation system, by steel canals ● Prevent entering food and animal inside ● Prohibition of taking photo with flash 	<ul style="list-style-type: none"> ● Wind-catchers ● Vestibule ● Passage way ● Chaharsou 	

Table 4. 4 Tate Modern


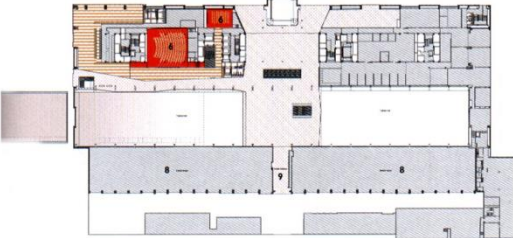
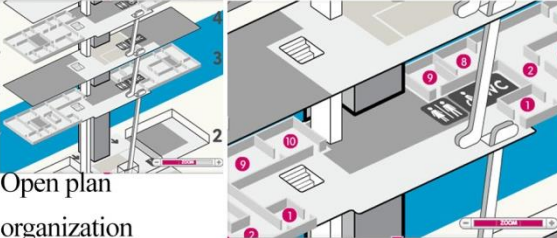
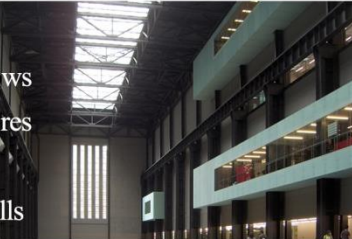



<h1 style="text-align: center;">Tate Modern</h1>	Location : London, UK	Architect : J.Herzog & P.de Meuron	ADAPTIVE REUSE 01
	Construction Date: 2000	Area: North wing; 7827m ² , west wing; 3299m ²	Style: Modern+ Art deco
General View	Plan schema		Functional Arrangement, Circulation and Accessibility
			 <p>Open plan organization</p>
Color and Light	Finishing Materials	Exhibition Units & Furniture	
<ul style="list-style-type: none"> • Roof openings • Clerestory windows • Artificial luminaires (glass panels) • Light colored walls 	<ul style="list-style-type: none"> • Carpets- Vinyl laminate • Plaster ceilings • Polished concrete • Lime stone • Natural oak wood • Glass partitions 		
Security	Environmental Factors	Style	
<ul style="list-style-type: none"> • Surveillance cameras • Exit signs • small fences 	<ul style="list-style-type: none"> • Control the direct sun emission by clerestories • Good cleaning program • Roof ventilation system, concealed above plaster ceilings 	<ul style="list-style-type: none"> • Art deco and Modernism 	

Table 4. 5 SCAD Museum of Arts


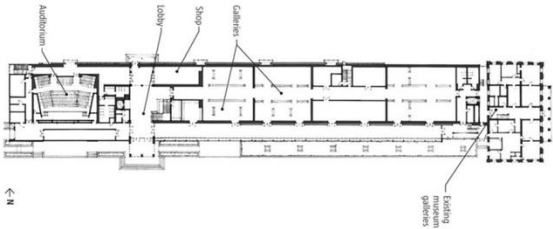
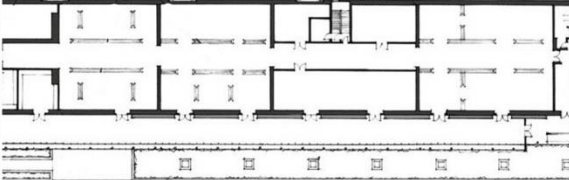




<p align="center">SCAD Museum of Art Savannah College of Art and Design</p>		<p>Location: Savannah, Georgia, USA</p>	<p>Architect: Christial Sottile</p>	<p>ADAPTIVE REUSE 02</p>
		<p>Construction date: 2002</p>	<p>Area: 7618 m²</p>	<p>Style : Modern</p>
<p align="center">General View</p>	<p align="center">Plan schema</p>		<p align="center">Functional Arrangement, Circulation and Accessibility</p>	
			 <p>Open plan organization</p>	
<p align="center">Color and Light</p>	<p align="center">Finishing Materials</p>		<p align="center">Exhibition Units & Furniture</p>	
<ul style="list-style-type: none"> • Natural light • Clerestory opaque windows • High efficiency light fixtures • Dominant color: white • Pink as motivating color 	<ul style="list-style-type: none"> • Brick • Matt glass • Concrete • Wood; left over timbers • Steel 			
<p align="center">Security</p>	<p align="center">Environmental Factors</p>		<p align="center">Style</p>	
<ul style="list-style-type: none"> • Exit signs • Small barriers for objects • Surveillance cameras 	<ul style="list-style-type: none"> • Control daylight by shelters on openings • Low emissivity glasses • On-site storm water mitigation • Water conserving system • High efficiency ventilating system 		<ul style="list-style-type: none"> • Mixture of Savannah cultural context and modern architecture 	

Table 4. 6 Istanbul Modern


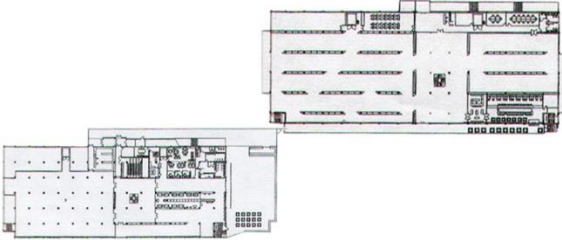




Istanbul Modern Museum	Location : Istanbul, Turkey Architect: Melkan Gürsel & Murat Tabanlıoğlu ADAPTIVE REUSE 03	
	Construction Date: 2004 Area :18000m ² / Building: 4000m ² Style: Minimal, Modern	
General View	Plan schema	Functional Arrangement, Circulation and Accessibility
		 <ul style="list-style-type: none"> • Walls as partitions • gentle ramp leads to the main floors
Color and Light	Finishing Materials	Exhibition Units & Furniture
	 <ul style="list-style-type: none"> • Polished concrete • Exposed services • Large glass opening • Colored and glass partitions 	
Security	Environmental Factors	Style
<ul style="list-style-type: none"> • Entrance control room • Surveillance cameras • Protective fences for artworks • Guiding signs 	<ul style="list-style-type: none"> • Control the direct sun emission by walls and shelters • Good cleaning system • Ventilation system, by steel canals • prevent entering food and animal inside • Prohibition of taking photo with flash 	<ul style="list-style-type: none"> • Combining modernity and tradition • Using updated Ottoman motifs • One floor peculiar for permanent turkish collections

Table 4. 7 Comparison Table

Originally Designed as Museums	Functional Arrangement, Circulation and Accessibility	Color and Light	Finishing Material	Exhibition Units and Furniture	Security	Environmental Factors	Style
SOLOMON R. GUGGENHEIM MUSEUM	Continuously visit along a spiral ramp	<ul style="list-style-type: none"> Natural light in rotunda Artificial lighting in galleries Whitish colors of walls 	<ul style="list-style-type: none"> Reinforce concrete Shotcrete Lightened concrete Suspended plaster Matt glass 	<ul style="list-style-type: none"> Wall mounted artworks Self standing units 	<ul style="list-style-type: none"> Surveillance cameras Check-in desk Fire alerts, Auto sprinkles Guiding signs Small barriers for artworks 	<ul style="list-style-type: none"> Control the direct sun emission by matt glasses Air conditioner system 	International style
POMPIDOU CENTER	Open plan Organization	<ul style="list-style-type: none"> Glass front section, proper daylight Artificial lighting in galleries White walls 	<ul style="list-style-type: none"> Linoleum Steel and glass structure Exposed services Wood and metal partitions Plaster, white walls 	<ul style="list-style-type: none"> Wall mounted artworks Self standing units 	<ul style="list-style-type: none"> Surveillance cameras Check-in desk Fire protection Guiding maps and signs Visual barriers 	<ul style="list-style-type: none"> Control direct sun emission Good cleaning program Roof ventilation system Prevent bringing food and animal inside 	International style
TEHRAN CONTEMPORARY ART MUSEUM	Continuously visit along a spiral ramp	<ul style="list-style-type: none"> Indirect Openings Artificial lighting Light grey and white walls 	<ul style="list-style-type: none"> Linoleum Concrete Carpet Plaster 	<ul style="list-style-type: none"> Wall mounted artworks Self standing units 	<ul style="list-style-type: none"> Surveillance cameras Check-in desk Fire sprinkles Guiding signs Small barriers 	<ul style="list-style-type: none"> Indirect daylight Good cleaning program Roof ventilation system Prevent food and animal inside No photos with flash light 	Mixture of Iranian traditional culture and modern architecture - Post Modern -
Buildings Adopted to a Museum	Functional Arrangement, Circulation and Accessibility	Color and Light	Finishing Material	Exhibition Units and Furniture	Security	Environmental Factors	Style
TATE MODERN	Open plan organization	<ul style="list-style-type: none"> Roof openings Clerestories Artificial lighting Light colored walls 	<ul style="list-style-type: none"> Vinyl laminate Polished concrete Lime stone Natural wood Glass partitions White walls 	<ul style="list-style-type: none"> Wall mounted artworks Self standing units 	<ul style="list-style-type: none"> Surveillance cameras Check-in desk Fire alerts, Auto sprinkles Guiding signs Small barriers for artworks 	<ul style="list-style-type: none"> Clerestories for indirect day light Ventilation system on the floor Good cleaning program 	Art deco and Modernism
SCAD MUSEUM OF ART	Open plan organization	<ul style="list-style-type: none"> Great amount of natural light by big openings Clerestories White walls 	<ul style="list-style-type: none"> Brick Matt glass Concrete Plaster Wood; left-over timbers Steel 	<ul style="list-style-type: none"> Wall mounted artworks Self standing units 	<ul style="list-style-type: none"> Surveillance cameras Check-in desk Fire protection Guiding signs Small barriers for artworks 	<ul style="list-style-type: none"> Shelters on windows for controlling daylight On-site storm water mitigation Water conserving system High efficiency ventilation 	Mixture of Savannah cultural context and modern architecture
ISTANBUL MODERN	Open plan organization	<ul style="list-style-type: none"> Artificial lighting as main lighting source Big window openings White and light Grey color tone 	<ul style="list-style-type: none"> Polished concrete Exposed services Large openings White walls Glass partitions 	<ul style="list-style-type: none"> Wall mounted artworks Self standing units 	<ul style="list-style-type: none"> Surveillance cameras Check-in desk Fire alerts, Auto sprinkles Guiding signs Small barriers for artworks 	<ul style="list-style-type: none"> Sheltering direct sunlight Good cleaning program Exposed ventilation system on the roof No photo with flash 	<ul style="list-style-type: none"> Combining modernity and tradition Use updated Ottoman motifs One floor for turkish collection