The Evaluation of the Architectural Programme of Modern Art Museums

Dr. Nazlı Nazende Yıldırım
Department of Interior Architecture, Atilim University
nazli.yildirim@atilim.edu.tr

ABSTRACT
Today's modern art museums are quite different from the traditional museum context in terms of their architectural programs. These modern art museums; It differs from museums where visitors see only works of art, and includes an architectural program in which visitors experience many functions such as watching performing arts, participating in the workshops, shopping in the store and eating in the restaurant / café. In this study, it is aimed to determine the architectural programs of modern art museums with litarature and empirical research. In the context of the modern art museum, the Istanbul Modern Art Museum and Solomon R. Guggenheim Museum, which can be described as qualified examples, are analyzed in terms of general design principles and architectural programs. it is emphasize that the importance of circulation, color and social areas in the architectural programme and design of modern arts museums.

1. INTRODUCTION

1.1 Aim and Scope

"A museum is an institution which collects, documents, preserves, exhibits and interprets material evidence and associated information for the public benefit" (Museum Association (UK), 1984). Museum contains exhibit art objects and / or antiquities for the purposes of preservation, stores, display, study and education. According to Piotrowski and Rogers (1999) "Education is the major focus of museums". Therefore in many museums, there are training units, study and research areas.

The history of museums is based on the Renaissance Italy. It was started to collect antiquity objects by the monarchs, the Vatican and wealthy families. In the 17th century, museums have expansion with development. By the 1800's, popularity of museums are increased by the Industrial Revolution. Then, museums come to this day with development and separately of the departments (Piotrowski and Rogers, [1999]). At the present time, context and programme of the modern art museums quite chanced according to other types of the museums. Therefore, in this research architectural programme of modern art museums are discussed in detail. The aim of this research to examine architectural programme of modern art museums in the terms of general design principles such as structure, lighting, material, color and ergonomics.

1.2 Methodology

This report is based on a literature review about art museum and empirical researches performed in İstanbul Modern Art Museum and Solomon R. Guggenheim Museum. In these empirical researches, are interviewed visitors of İstanbul Modern Art Museum and both of these museums is observed the lighting, color, material and design language.

2. GENERAL DESIGN PRINCIPLES

There are some principles in designing a museum as all kind of buildings and products have.

These are structure, lighting, material, color and ergonomics.

Structure is a system that is necessary for standing of the building. The structure of the museums should not obstruct the circulation for this reason, museums should not have more columns on the other hand it should have walls since walls are exhibition areas. Furthermore, Layout of many museums is flexible. Large open galleries of in these museums, there are movable partition walls for some exhibits. Galleries subdivided with these elements (Robillard, [1982], Piotrowski and Rogers, [1999]).

Light supports to see the environment. Lighting is a primary medium defining spaces. There are two types of light. First is daylight. Direct sun light must not take inside of galleries. UV radiation must be eliminated because it reasons the damaging of exhibition objects and materials (Adler, [1999]).

Second is artificial light. There are many types of artificial lighting. In general, museums illuminate with accent lighting. Accent lighting is composed of modeling, key light, fill light, up light-down light and cable and track (Lechner, [1991]).

In general, there are two methods used for the museum lighting. The first one is black box. In this method, lighting created contrast. In these spaces, is brightened up very low but exhibition objects are brightened up with a dense light. In the other method, a lighting contrast is not created. In this space, because both spaces and exhibition objects are illuminated at the same time (Robillard, [1982],).

Lighting facilitated the perception of visitors on the exhibition objects. Sudden changes in lighting levels and extreme contrast of brightness should not preferred. Because, human eye can adapt to the sudden change in light level easily (Adler, [1999]).

The ability of endurance of the light is different for different materials. There are three types of recommended maximum light dosages for different materials. Light dosage is maximum 200 (kilolux-h) for textiles, costumes, water colors, tapestries, prints and drawings, manuscripts, miniatures. Artificial lighting usually archives this level. Lighting dosage is maximum 650klh for oil and tempera paintings, undyed kathen, horn, bone and ivery, oriental lacquer its level archives to using the daylight component. If exhibition objects are metal, stone, glass, ceramics, jewelry, enomel; maximum dosage of the light should be 950klh (Adler, [1999]).

Architectural materials and color schemes provide a background for exhibit spaces and galleries. Many museums use to this method. For wall treatments, materials that can be easily changed or will readily hide holes from pictures hangers should prefer. In general, textured wall coverings and paints are used for wall treatments. In the lobby and major traffic corridors, hard surface flooring should be used because of maintenance. Carpet can be preferred as a covering material. Especially, in large gallery rooms, it helps to acoustical issues and it allows wheelchairs, walkers or baby strollers. The color of carpet used in these areas, should be neutral color such as tons of the grey or soil. The colors of carpet should not be more dominant than the color of the exhibition object (Piotrowski and Rogers, [1999]).

Objects and spaces are perceived differently with different colors. In galleries, using of assertive colors is avoided such as orange, yellow or blue. Because these colors decrease to perceiving of exhibition objects. On the other hand white is much used but it should not be a best choose. Because the using of the white should be tired the eye of human beings. Moreover, white creates a contrast with the colored exhibit objects. Therefore, in modern art museums, it is better to use grays, its tons and neutral colors such as light soil colors (Pile, [1997]).

The last design element is ergonomics. Ergonomics is a study that is done for right relationship between the dimensions of the human body and its environment. Therefore,

the size of human body in relation to exhibition cases should be appropriate. Because comfortable head movements of human being are limited (Robillard, [1982]).

In planning the museum, circulation is an important problem which is necessary the solving. The circulation that is a good designing provides the visiting of the museum by the visitors. In this respect, the form and scale of circulation spaces have an importance. For crowd control and surveillance, a variety of types of circulation systems are used in museums. The most common systems include the straight, linear, open, chain, comb, fan, and spiral paths (Robillard, [1982]).

In circulation of the museum, there are some key points. These are repeating orientation cues, variation in path widths, primary and secondary routes, large landmarks and focal points, centrally located people movers, easy traffic flow, lighting different than other spaces, textures different than other spaces, unobstructed sight lines (Robillard, [1982]). In this extent, landmarks are important in the orientation system. Landmarks involve spatial landmark and object landmarks. The spatial landmark consists of tall open domes, atriums, multi-story interior courts, etc.

The object landmark composes of ornaments, sculptures, pools, green plants, etc. Here maps, sign and landmarks are located at each major decision point such as stairs, elevators, foyers, landings, corridor junctions (Robillard, [1982]).

3. THE PART OF A MODERN ART MUSEUM

3.1 Public Areas

In public areas, people come together. In public areas of the museums, the visitor visit the galleries, sit in a cafe or restaurant, do some shopping in a gift shop and make researches in the library. Public areas include two subspaces: free spaces and paid spaces. The following sections discuss these spaces.

3.1.1 Free Spaces

Visitors do not need to buy ticket in these areas. They walk around without paying any money. These social areas attract the people of the city in to the museum. Free spaces include six subspaces: entry, restaurant, cafe, training units and library. The following sections discuss entry in detail.

Restaurant and/or cafe are located in the ground floor, but sometimes they are located in the top floor. They are also one of the financial sources of the museum like the gift shop. Restaurant and cafe have indoor and outdoor areas. Generally, outdoor areas are located in a garden or a terrace (Piotrowski and Rogers, [1999]).

Training units provide educational opportunities. They contain classroom, workshop, a coatroom and an auditorium.

In a classroom, language lessons or history of art lessons are teached. In workshops, painting, music, tile, stained glass courses are teached.

Students put their clothing to the coatroom. Shows are presented for students in the auditorium. Large museums have their own library. The library consists of information collection, librarian desk, coatroom, copy room, student areas and book stacks. The information collection includes exhibition brochures or magazines.

In the librarian desk is where the librarian is located. Researchers get the copy of the documents in the copy room. They make researches in study areas. These areas may be individual areas or open study areas. Books are located in book stacks.

3.1.1.1 Entry
The entry is the key point for the visitor and the museum. A well-designed entry hall is organized to direct visitors to the main part of the public museum. The first and the last impressions about the museum are captured in entry halls. Therefore, it needs to be designed attractively. Traffic flows in entry halls must be carefully considered because of the amount of activities realized in these halls (Robillard, [1982]).

There are some important principles to design the entry. First, visitors use different ways to come to the museum such as on foot, by car or by mass transportation. For this reason, museums should be located closed to the bus and / or metro stops. Moreover, they involve car parks for private automobiles. Second, climate conditions are important. Because visitors need canopies and covered driveways. Third, the access of physically disabled and elderly people should be considered. In order to ease their usage, ramps are used in museum (Darragh and Snyder, [1993]).

An entry hall includes lobby, information and membership, coatroom, security control, ticket sales, apparatus desk and gift shop. In the lobby, visitors wait to ticket booth. Information desk is located in the center of lobby for easy of access of visitors. Coatroom is also located in the entry. Since visitors want to take off their clothing before entering the main parts of the museum.

Security control is important point for a museum. The number of access points should be decreased. In this way, security problems are minimized.

> *The ideal is one public entrance monitored by information staff and / or attendants, and one staff entrance controlled by the security staff responsible for key control and the checking of deliveries and outside contractors (Adler, [1999]).*

The number of sales ticket desk is designed according to the visitor capacity of the museum to prevent long ticket tails. Visitors take apparatus from the apparatus desk. In museums, the gift shop and bookstores are generally located in the right side of the entry. Because people have the tendency to turn to the right side of the entrance. Gift shops are one of the important financial sources for the museums (Robillard, [1982]).

3.1.2 Paid Spaces
Visitors pay the money in the entrance of paid areas. They involve galleries, auditorium, conference hall and car park. The following sections discuss these spaces.

First, there are auditorium and conference hall in most of the museums. Public lectures, media presentation and large group meeting are done in auditorium of the museum. Moreover, conference rooms are used by benefactors (Piotrowski and Rogers [1999]).

Second, capacity of the museum is considered with creating. The capacity of the car park is designed in terms of the capacity of the museum. Additionally, a car park is located close to the museum.

3.1.2.1 Galleries
A gallery consists of one or more rooms. Art works such as painting, installation and performing, object are taken place in the gallery. Generally, galleries are not located in the second or third floors. Since visitors spend more time in the first floor. Therefore, the major exhibitions are exhibited in the main floor and the following floors involve the less important exhibitions objects (Piotrowski and Rogers, [1999], Robillard, [1982]).

Galleries are composed of exhibition galleries, collection galleries and outdoor exhibition galleries. Exhibition galleries are located in accessible place in the museum because the exhibited objects are changed frequently.

Collection galeries contain permanent exhibition. The permanent exhibitions are never changed. Collection galleries consist of painting, photography, prints and drawing's (Darragh and Snyder, [1993]). Outdoor exhibition galleries are located in open areas of the museum. They may contain temporary and permanent exhibition. Exhibitions should be protected to climate conditions.

3.2 Non-Public Areas

Non-public areas are not used by the TS visitors of the museum. Only the personal of the museum are allowed to use these areas. Non-public areas include two subspaces: art related spaces and non-art related spaces. The following sections discuss these spaces (Darragh and Snyder, [1993]).

3.2.1 Art Related Spaces

Art related spaces are a place that relate with exhibition objects. They consist of four subspaces:
Archive, research area, study area, storage and curatoral's areas.

In the archive of the museum, documents and exhibition objects are kept. The archive involves documentation room, study area, office and work room. Documentation room preserves documents. Staff of the museum makes researches in the study area for developing the archive of the museum. Staff that is responsible for the archive uses the office. In the work room, documents of the archive are arranged. Researchers use research and study areas to make researches study areas are private areas, but research areas are public areas for making researches. The storage contains objects that are not exhibited. There is a relationship between capacity of the storage and gallery areas. Generally, storage areas are two or three times larger than gallery areas. Additionally, direct connection should be between the storage and the gallery to provide on easy transportation. Storage is composed of exhibition storage, collection storage, loading dock, repair room and packing room. Exhibition storage is the storage of the temporary exhibition. Collection storage is the storage of the permanent exhibition. Loading dock is a kind of lift which is necessary for transferring exhibition objects. In the repair room damaged exhibition objects are repaired. Saled exhibition objects are packed in the packing room. Last, curator is a person that arranges the exhibition. Curators of exhibitions use curatoral's areas. Curatoral's areas consist of curator offices and study areas. Curator offices are used by curators. Moreover, in study areas they meet or study together.

3.2.2 Non-Art Related Space

Generally, non-art related spaces include administrative functions and general service (Darragh, and Snyder, [1993]). These areas provide the main spine of the museum.

Non-art related spaces contain five subspaces: administration, accounting, personal areas, cleaning and other services. The museum is administrated by the administration. It composes of offices and meeting room. The manager of the museum locates in the office. Staff of the administration unit comes together in the meeting room. Accounting deals with financial works of the museum. Accounting area involves of the staff the offices. Personal areas consist of offices, rest room, clothing room and cafeteria. They include offices of personal managers. Rest room is a common area for the personal. In the clothing room, they change their clothing. They have a lunch in cafeteria. The cleaning room involves the cleaning area and cleaning equipments. Other services include technical units such as mechanical equipment room, data processing room and telecommunication room. Mechanical equipment room involves electrical, gas, plumping and central heating systems.

4. EMPIRICAL RESEARCH

In this section, İstanbul Modern Art Museum and Solomon R. Guggenheim Museum are searched.

4.1 İstanbul Modern Art Museum

İstanbul Modern Art Museum is located Meclisi Mebusan avenue, Zone of the Seaport Managings, 4th entrepot, Karaköy İstanbul. Its architects are Melkan Gürsel and Murat Tabanlıoğlu. The financial source of the museum is Eczacıbaşı family. In 2004, Entrepotwas renovated and it was done the museum. The main philosophy of the museum is freedomand art. The main approach of the museum is transparency and fluidity. (Tabanlıoğlu, 2019, n.p.). İstanbul Modern Art Museum contains entrance, ticket sales, security control, sculpture exhibition area, foyer, coat room, library, photography exhibition area, multifunctional hall, offices, storage, cinema, wc, personal area in the ground floor (as it is shown figure 4.1).

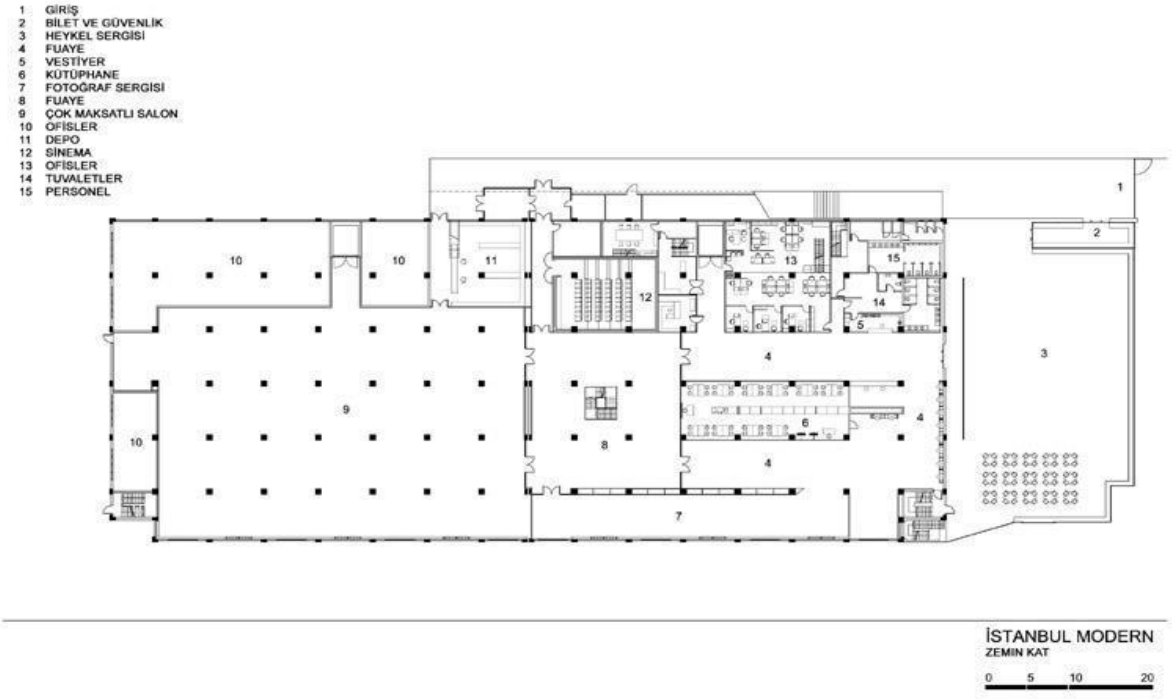

Figure 4.1 İstanbul Modern Art Museum ground floor. (Tabanlıoğlu, 2019, n.p.)

The entry, foyer, temporary collection, permanent collection, gift shop, cafe, terrace, offices, storage, training area, coat room, ticket sales, security control, meeting rooms, wc are located in the first floor (as it is shown figure 4.2).

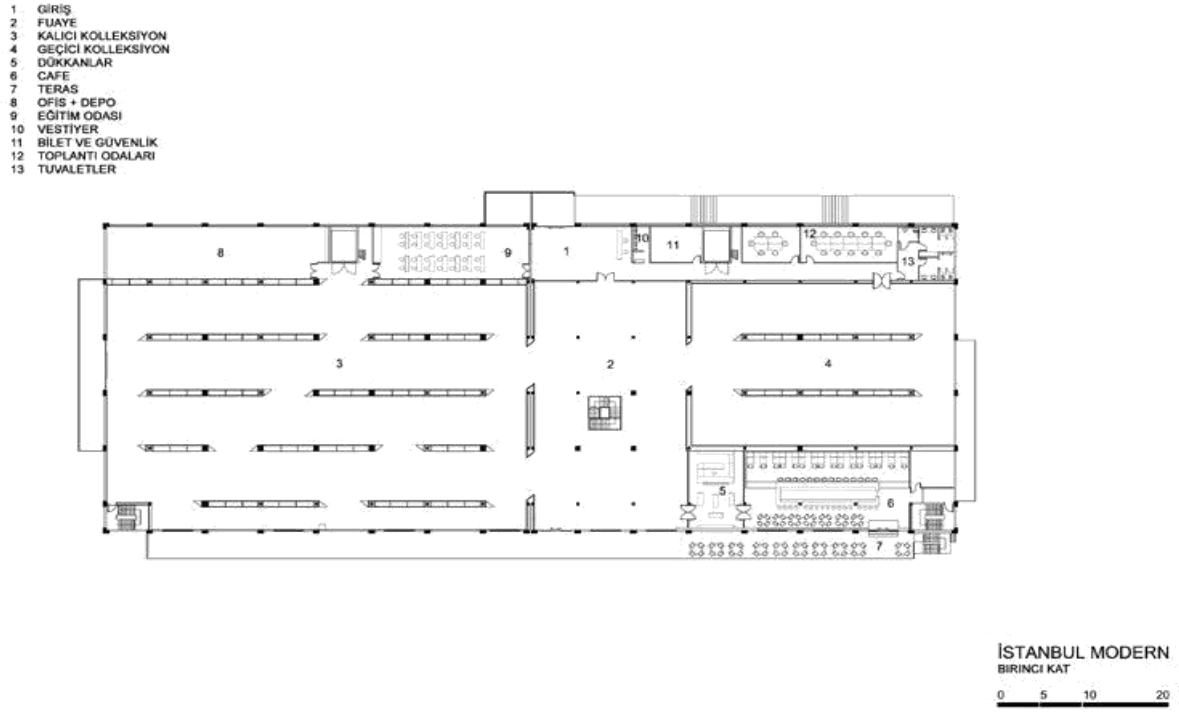

Figure 4.2 İstanbul Modern Art Museum first floor. (Tabanlıoğlu, 2019, n.p.)

This museum has a rectangle plan diagram. The design units oriented with respect to the landscape. The plan is divided into two sides. All galleries areas, foyers, café and terrace are located in the sea side. Other functions- offices, personal areas, WC, meeting room, cinema, training room, library, ticket sales, security control, coatroom, and storages- are located in the other side.

In the ground floor, columns are seen and in this area, there is free circulation (as it is shown figure 4.3). The library is located in the center of the museum. It is located close to the entrance as the cinema is located.

Figure 4.3 Gallery. (Tabanlıoğlu, 2019, n.p.)

In the first floor, columns are hidden inside the exhibition walls (as it is shown figure 4.4). The circulation of these galleries constitutes a linear form. The training unit is related with the galleries in these areas.

Figure 4.4 Gallery. (Tabanlıoğlu, 2019, n.p.)

In both floors, stairs are used as a design element. Only stairs are emphasized in the foyer (as it is shown figure 4.5). This approach provides a simple understanding for the İstanbul Modern Museum. The stairs are made up of mat stainless steel.

Figure 4.5 Foyer. (Tabanlıoğlu, 2019,n.p.)

In galleries, grey and white colors are used orderly (as it is shown figure 4.6). These colors are used in a correct way in modern art museums the usage of soft colors such as grey and its tons are recommended by the experts (Pile, [1997]). Because, these colors facilitate the perception of the exhibit objects. Grey epoxy is used in floors of the galleries. The white paint is used in the walls and dark grey is used the ceiling. The lighting fixture is located linear and it provides continuity. Although, in floors and walls immobility is preferred; in ceiling, movement is preferred. The seating units are located with respect to the circulation axle. It is made up of grey leather. The corner of the wall creates angles. This provides an easy circulation.

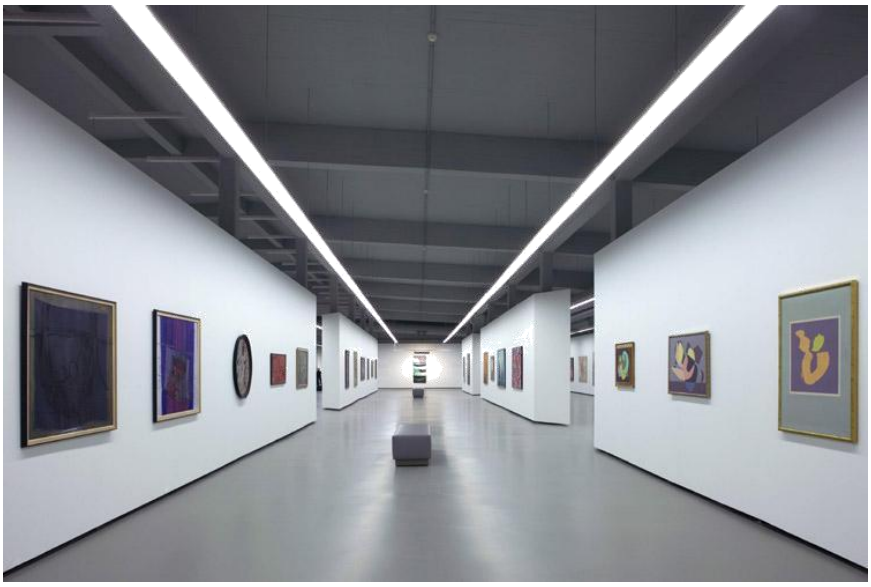

Figure 4.6 Gallery. (Tabanlıoğlu, 2019, n.p.)

In the gift shop, visitors may buy both special design products and many other products which can attract themselves (as it is shown figure 4.7 and figure 4.8). The gift shop provides financial source for the museum. In this area, three types of lighting fixtures are used which enriches the visual impression on the gift shop. The grey epoxy is used in the floor. The products are presented in two ways. Some products are sold in the counters, while the others in the shelves. They are made up of wood. The usage of the wood provides warmth. In the ceiling, suspended ceiling is used. Some lighting fixture is recessed lighting. Some are cable and track lighting and others are lampshades.

Figure 4.7 Gift shop. (Tabanlıoğlu, 2019, n.p.) **Figure 4.8** Gift shop. (Tabanlıoğlu, 2019, n.p.)

The café is designed with some design principles. Grey and white colors are used and pink color is used as an extra color. In this way, café is separated into other areas. The lampshades are used in space. There are two types seating units. These are bar unit and table unit. The café has a Bosporus view. It is also a financial source for the museum (as it is shown figure 4.9 and figure 4.10).

Figure 4.9 Café. (Tabanlıoğlu, 2019, n.p.)

Figure 4.10 Café. (Tabanlıoğlu, 2019, n.p.)

In İstanbul Modern Art Museum some courses are given according to demand from the visitors. This courses which are paid courses are taken by experts. These courses create a socializing atmosphere for the museum. In this area, flexible furniture is used. Therefore, flexible space is created (as it is shown figure 4.11).

Figure 4.11 Training area. (Tabanlıoğlu, 2019, n.p.)

4.2 Solomon R. Guggenheim Museum

Solomon R. Guggenheim Museum is located 1071 5th avenue (at 89th street), New York. Its architect is Frank Lloyd Wright. It was done in 1959. It is different from traditional museums. The mass of building involve a circular roller that being done white pure concrete to increase of widening towards to top. Additionally, in interior area there is circular ramp that access to six floor height. In interior areas, purity is dominating (Museum, 2008, n.p.).

Solomon R. Guggenheim Museum composes of main entrance, education office, conference room, entrance to theater, theater, computer lab, multimedia lab, art education area, media, theater, studio art lab, resource center in the ground floor. In first floor, main entrance, theater entrance, education offices, galleries, café, store is located. The second floor includes gallery and reading room. There are galleries in the third, four and five floors. The six floors involve store and gallery (as it is shown figure 4.12).

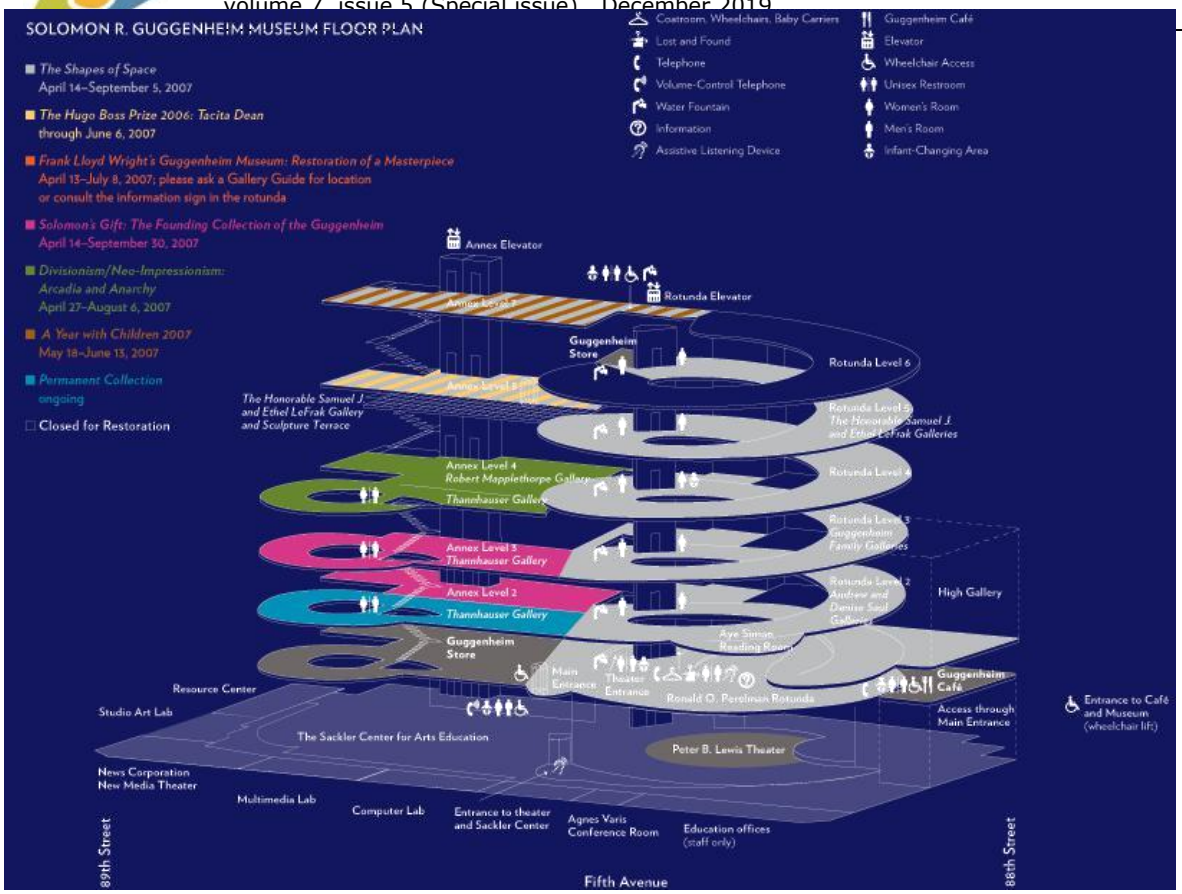

Figure 4.12 Solomon Museum floor plan. (Museum, 2019, n.p.)

Solomon R. Guggenheim Museum has a circular plan diagram. First, second, third, four, five floors include galleries. Education office, conference room, entrance to theater, theater, computer lab, multimedia lab, art education area, media theater, studio art lab, resource center are located in the ground floor. Stores are located in the first and in the six floors. Solomon R. Guggenheim Museum has a large lobby which gathers the people. The circular band starts in the lobby and directs the visitor's galleries. This band which accesses into all floors, it orients the visitors (as it is shown figure 4.13). Therefore, disabled peoples are taken into consideration.

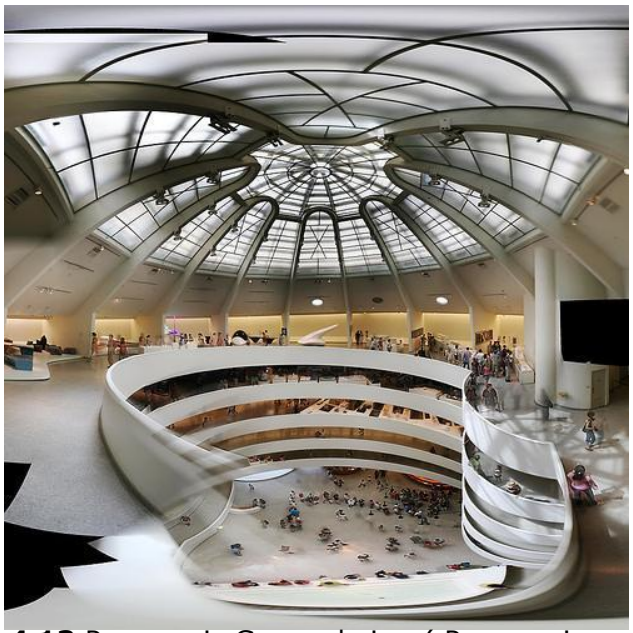

Figure 4.13 Panoramic Guggenheim. (Panoramic, n.d., n.p.)

There are galleries in five floors. In floors, walls and ceiling of the galleries beige color is used. In ceiling, coffers are used as a lighting fixture. These have band shape (as it is shown figure 4.14).

Figure 4.14 Guggenheim gallery. (Photo gallery, 2019, n.p.)

To the gift shop is reflected the purity of the museum. All furniture in the gift shop is made up of wood. Therefore, it has a warmth atmosphere. Additionally, the purity is preserved with using single color. The products are presented in two ways. Some products are sold in the counters, while the others in the shelves (as it is shown figure 4.15 and figure 4.16).

Figure 4.15 Gift shop. (Museum store, 2019,n.p.)

Figure 4.16 Gift shop. (Museum store, 2019,n.p.)

Generally, the circular construction of the museum is perceived in the top floors. This interior spaces organization that is provided by open circular bands. This creates a social relationship among people (as it is shown figure 4.17).

Figure 4.17 Guggenheim. (Urban planning, n.d., n.p.)

Visitors at bottom or top floors can see each other during the wall in the band. This is advantage for me buildings which have atrium. These reception areas are like a city square (as it is shown figure 4.18).

Figure 4.18 Lobby. (Guggenheim membership, 2019. n.p.)

5. CONCLUSION

The aim of this research to examined architectural programme of modern art museums. This report is based on a literature review about art museum and empirical researches performed in İstanbul Modern Art Museum and Solomon R. Guggenheim Museum.

All functions that were necessary for the architectural programme of the modern art museums were determined in detail, in this report. The complexity of modern art museum was understood in this research. There is a need to consider the structure, lighting, color, material, ergonomics and circulation, in this architectural programme the modern art museum since these factors have great on successful or unsuccessful display of the exhibition object.

The two modern art museums that were examined in this study considered these design elements in their architectural programs. Both İstanbul Modern Art Museum and Solomon R. Guggenheim Museum were successful examples in this respect. Compared to the literate these museums have additional functional İstanbul Modern Art Museum has a cinema and a special café. In Solomon R. Guggenheim Museum there is a theater.

At the end of the empirical researches, three important elements were determined for the modern art museum. These are circulation, color, and social areas, these three factors are very important for a museum.

First, both İstanbul Modern Art Museum have a successful circulation. In Solomon R. Guggenheim Museum, circulation provides a circular band and ramp. This provides a very positive impression for the visitors. Because, visitors do not want to use the stairs and do not want to loose their way. The circulation of the İstanbul Modern Art Museum is successful. İstanbul Modern Art Museum do not have many floor. This is an advantage for the visitors.

Second, color is an important for a museum. In Istanbul Modern Museum grey and white colors are used. This combination is very successful for a modern art museum. It provided enriches to the purity of the museum. In Solomon R. Guggenheim Museum beige color is used. A combination of color is not used. This result in monotony with this respect, İstanbul Modern Art Museum is more successful than Solomon R. Guggenheim Museum.

Last, social areas were attractive areas of the museum. In İstanbul Modern Art Museum has a cinema. The cinema has positive value for the museum. In this way more visitors come to the museum. It was a financial source for the museum. Solomon R. Guggenheim Museum has a theater. The theater creates privilege for the museum. Therefore, museum has always visitors. It strengthened the relationship between the society and the museum.

To summarized, this report was studied the architectural programme of the modern art museums. The design principles that being important of a modern art museum was research. The parts of modern art museums were examined. The including of many functions of modern art museums and the importance of these functions were understood. In the empirical research, İstanbul Modern Art Museum and Solomon R. Guggenheim Museum are examined. At the end of the empirical researches, the importance of the circulation, color, and social areas was understood for a modern art museum. Therefore, at the during the design of a modern art museum, circulation should design with correct way, should be chosen correct colors and social areas such as cinema, theater, restaurant, café and training unit.

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