New Designs in Circulation Areas and Museums

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Abstract

In the traditional museum concept of Pre-Modern Architecture; the real function of museums was to exhibit, protect and store historical art crafts and works of art. Traditional museum spaces are generally built with the restoration of historical buildings and particularly re-utilization of palaces. During Pre-Modern Architecture; it is seen that circulation areas of the traditional museum buildings are clearly and precisely contained in plans and sections with regular geometric forms and linear circulation schemes. Circulation areas are leading in these plans in which space organization is stabilized between entrance of the museum and exhibition hall but pre-determined routes cannot answer personal choices and interests.

During the Modern Era, neoclassic architecture designing the traditional museums is quit due to Bauhaus effect. In the Modern Museum Era, the museum of F. L. Wright’s Guggenheim Museum (1959) presented a different perspective on circulation areas and such new buildings as Mies van der Rohe’s New National Gallery became a striking museums.

During the Pre-Modern Era of 1970s; new buildings questioning general typologies and offering advances in terms of design and function are started to be built. Pompidou Culture Center (1977) designed by Renzo Piano and Richard Rogers presented a new projection to museum architecture, indoor places and circulation concept, urban sites. Architects not only looked for unattempted forms but also their quest for unattempted forms were continued for internal places, too and internal implicit setups were designed using ortographic tools like plans and sections.

In today’s museums; new and multiple circulation routes are designed; in which visitors do not read books from beginning to end but choose their own paths and walk through the exhibition as if in a labyrinth on their own. These radical perceptional, spatial changes and spatial scenarios are particularly emphasized in museum buildings. These new spatial arrangements in circulation areas are offering new spatial experiences with irregular gaps in sections, regular but non-geometric floor plans, vagueness of the borders, striking colors, patterns and materials, differentiated circulation parts (stairs, escalators, elevators, platforms, bridges).

In the study; Pompidou Center (1977) which is a landmark in circulation area design’s, by giving examples of today’s museum buildings, Orsay Museum(1986) which was transformed into a museum from train station and Jean Nouvel’s Quai Branly Museum (2006) which is a recent example of this striking change has been analyzed thorough spatial experiences, observations, syntactic analysis technique and semantic examinations.

**Keywords:** Circulation area designs, Exhibition techniques, Museums, Spatial experience
Introduction

The definition of a museum has evolved, in line with developments in society. Since its creation in 1946, ICOM updates this definition in accordance with the realities of the global museum community. According to the ICOM Statutes, adopted during the 21st General Conference in Vienna, Austria, in 2007:

A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment (URL-1).

Museum concept—which dates back to antique Greek temples, progressed with the initiation made by bourgeois who exhibited their own art works in a part of their houses during the late 17th century. Progression of museums- which were first designed for exhibition and preservation- can be separated into three subtitles: pre-modern architecture, modern architecture and post-modern architecture

Pre-modern Architecture: Traditional museum plan typology of pre-modern architecture can be classified as palace-museums and temple monument museums (Atagök, 1999).

Palace-Museum: Traditional museum buildings are generally constructed with re-use of historical buildings after the restoration. Of those buildings transformed into museums; palaces come first. Palazzo Medici–the house of Medici family- is accepted as the beginning of European museums Uffizi Palace which was designed by Vasari in 1560 for administrative offices and then was transformed into museum in 1584 to exhibit art works has been a reference point for museum studies and exhibition designs (Artun, 2012). (Figures 1-3)


The project of J. N. L. Durand which included four square areas separated from each other by corridors running around a domed rotunda constitutes typical museum scheme of the period which can be classified as Palace Museum. Palaces and -later- huge villas were adapted and transformed into museums for the exhibitions of the art objects (Atagök, 1999). (Figures 4.5)
Figures 4.5. Durand’s Section Diagram and Plan of the Typical Museum (Source: URL-4)

Figures 6-10. Glass Pyramid Entrance Lobby Designed by I. M. Pei, Halls and Long Linear Corridors and Grandiose Stairs (Photo: by Okhan Ataoğlu, 2005 and Author, 2013)

Temple-Monument Museum: The architects who designed new museums in the 19th century employed antique Greek, Roman and Italian renaissance forms in order to revive civilization theme. The 19th museum architects faced the problem to find the appropriate styles as well as to organize the indoor of the museums.

Glyptotek (1816) designed by Leo von Klenze in Munich and Altes Museum designed by Karl Friedrich Schinkel in Berlin have been regarded as museum typology called as Temple Museum with rotundas and monumental stairways (Atagök, 1999). 19th century museum areas are often planned around a central rotunda like pantheon or an atrium. This central area is the start and finish points of the ritual walk performed in the right and left galleries (Duncan and Wallach, 2004), (Roth, 2000). Pantheon’s dome during the golden ages of the museum became its symbol (Artun, 2012). (Figures 11-14)

Rigid arrangements outside these museums are generally formed in exhibition plans with the same rigidity. These are generally the museum plans that were drawn in line with the versions proposed by Durand’s indoor museum designs (Pevsner, 1976).

Modern Architecture: In terms of producing the necessary architectural designs; unprecedented structural needs that astonished the architects occurred in the 19th century. Buildings of world exhibits pioneered the 20th century museums. Transparent and glass structures like Cristal Palace designed by Joseph Paxton for the first world fair (London, 1850-51) later demonstrated their influence on the museum buildings constructed in the mid 20th century (Roth, 2000). With the effect of Modern Architecture and Bauhaus; museum architecture started to move away from 19th century neoclassic museum architecture. With the museum designs made by pioneers of the modern architecture like Le Corbusier, F.L. Wright, Mies van der Rohe, Louis Kahn, a new era started and museum architecture underwent a radical change in the 20th century.

Unlimited growth spiral museum of Le Corbusier was built in a square spiral form where circulation expands around a center infinitely and continually. Spiral square plan developed by Le Corbusier in 1929 and 1939 was first used in the museum built in Ahmedabad city of India (URL-5). In the museum of Ahmedabad; spiral square plan produces spiral circulation design around the hall with an access ramp in the center of the building and thus a novel space-organization was achieved that allowed flexible walking (Baker, 1984), (Besset, 1987), (Engels and Meyer, 2001). (Figure 15-20)


Frank Lloyd Wright designed the building in the Guggenheim Museum in New York with a spiral ascendant ramp from entrance to the roof. Atrium in the middle is illuminated by a glass dome. It became an unusual and striking approach in the museum design to have constructed the exhibition-place -in which the whole space is perceived- with a spiral ramp idea which is the center of circulation. (Figures 21-24)
In Kahn’s plans, the division between service taking and service giving places was the main principle of his designs. Throughout his architectural career; Kahn used variations of this principle and designed the main areas providing flexibility and all-purposefulness (Gülgönen, 2002). Kimbell Museum has been donated with exhibition halls that permit flexible walking by letting natural light inside vaulted spaces (Anonymous, 2002). (Figures 25-28)

In all of his buildings; Mies persistently designed open plan schemes that run towards each other and the repeated forms of these schemes with slight changes (Bilgin, 2002). In New National Gallery as in the German Pavilion in Barcelona (1929); Mies repeats his continuous space scheme in which he frees architectural volumes, creates no closed and static geometric forms and uses vertical planes providing a continuous movement in visual angles (Zevi, 1990). (Figure 29-32)

Postmodern Architecture: Museum buildings continued to increase in number during 1950s and 1980s became a turning point in the development of museum architecture. New constructions with novel advancements in design and function that challenged the general typology were created. Museums was turned into a culture-center with temporary exhibitions and shows, meeting and conference halls, research and study units, libraries, hobby spaces that enabled participation from all ages, workshops, cafeterias, restaurants, bars and museum sale-points. Museums whose collections were not visited again became dynamic culture and entertainment centers with continuously
organized temporary exhibitions and educational activities (Broto, 2013), (Canbakal, 2002), (Jodidio, 2011).

Museums during 1980s were designed in the form of remarkable, iconic, monumental constructions where the architect demonstrated his creativity and which -transforming the city- provided an image and identity. Going beyond the typologies in the museums; museum buildings were regarded as art works. During 1980s; architects sought not only for unattempted quests in their museum designs but also never-tried pursuits in indoor spaces and created indoor designs which were difficult to perceive with orthographic tools such as plans and sections. Particularly; in the museum buildings, these radical perceptual and spatial changes and spatial scenarios draw attention in the design of circulation area of indoor sites. The Center Pompidou (Rogers and Piano, 1977), Guggenheim Bilbao Museum (F. Gehry, 1997), Jewish Museum (D. Libeskind, 1998), Kiasma Museum (S. Holl, 1998) and Phaeno (Z. Hadid, 2005), Quai Branly (J. Nouvel, 2006), MAXXI Museum (Z. Hadid, 2009) etc. stand out with their monumental city museum characteristics, different forms and unique circulation designs. When circulation areas of these museums were analyzed; it was noted that they included flexible and different circulation schemes as well as classic typologies (Jenks, 1998).

Examples

In the study; Pompidou Center (1977) which is a landmark in circulation area design’s, by giving examples of today’s museum buildings, Orsay Museum (1986) which was transformed into a museum from train station and Quai Branly Museum (2006) which is a recent example of this striking change has been analyzed thorough spatial experiences, observations, syntactic analysis technique and semantic examinations. (Table 1)

Table 1

<table>
<thead>
<tr>
<th>MUSEUM</th>
<th>LOCATION</th>
<th>ARCHITECT</th>
<th>OPEN YEAR</th>
<th>COLLECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>POMPIDOU</td>
<td>Paris, France</td>
<td>R. Rogers &amp; R. Piano</td>
<td>1977</td>
<td>20th c. art</td>
</tr>
<tr>
<td>ORSAY</td>
<td>Paris, France</td>
<td>Victor Laloux Transformation project by ACT architecture group</td>
<td>1900-1986</td>
<td>Art Nouveau Epiclyonism NeoEpiclyonism</td>
</tr>
<tr>
<td>QUAI BRANLY</td>
<td>Paris, France</td>
<td>Jean Nouvel</td>
<td>2006</td>
<td>Africa, Americas, Oceania and Asia ethnic art</td>
</tr>
</tbody>
</table>
Pompidou Center, Richard Rogers, Renzo Piano, Paris, 1977

According to the Grunenberg (1999, p.102); the most striking change in the comprehension and function of the modern art museum was probably at Pompidou Center. The institution that works in this colossal building which was built with a futuristic design is much more than a traditional museum. In Pompidou Center; there are art collections and exhibition galleries as well as a public library, industrial design center, forum, performance center for dance, theatre and music, cinema, workshops for children, sale-points and a cafeteria. In the museum; rich examples of 20th century and fauvism, cubism, surrealism art movements can be seen. Although the building led to disputes due to its scale and form in the urban space when it was constructed; it became popular. It served as a catalyzator in the urban reforms and joined urban life with its front-open-space where street artists present their performances.

The visitors enter the basement, take the moving stairways and then go upstairs; which enlivens the center. In Foster, Siegried Kracauer’s words; the favorite picturesque form of the building is composed of locals of the building and their walking around and meeting are defined as mass ornaments (Foster, 2011, p. 50-51).

Pompidou turns its substructures such as moving stairways, escalator, vent ducts, installation pipes and water pipes out as if inside out. Installation pipes that give a colorful image have different colors so that they can be distinguished. Vent ducts are blue, water pipes are green, electrical lines are yellow and vertical movement areas-stairways are red. Service tubes function as if modern decoration-form, too. (Figures 33-47)

Circulation Plan of Pompidou Center and Spatial Experience

In the large entrance of the building; there are museum stores, cafeteria, escalators that facilitates the access to the gallery floor. In order to get to the art galleries; first it is necessary to take the escalators to gallery floor from the large entrance lobby. Access to the others floors from gallery floor are possible with moving stairways designed at the front building. Visitors pass from the platform of the escalators to transparent tubes and from the tubes to large circulation arteries. From this main circulation artery; visitors can visit art galleries lined up room by room without being dependent on one point.

Mechanical systems designed outside the building free the indoor spheres. Thus, flexible spaces that serve for different objectives are obtained. Multi alternative circulation schemes can be followed for the users to watch art galleries depending on their preferences.

When section of the museum is analyzed; it is seen that floors are repetitions placed on each other. Floor sections produced with monotonous repetitions differ thanks to the escalators installed at the front building which provide the museum with a strong identity. While going upstairs from the
escalators; it is a different spatial experience to stare at Paris, the square in front and the people here.

**Figures 33-44. Pompidou Center, Richard Rogers, Renzo Piano, Paris, 1977, (Photo: by Okhan Ataoğlu and Author, 2013)**

**Figures 45-47. Pompidou Center, Section, Plan, (Source: Plan and Section, Weston, 2004)**

**Orsay Museum, Paris, 1986**

Originally a train station by Victor Laloux at the beginning of the century; the building was opened in 1986 as Orsay Museum. The museum came into service after a detailed restoration process in order to exhibit the works and creative objects of the period, time and society between 1848 and 1914. On the basement of the museum; significant objects of mid-19th century and late 19th century are exhibited. On the middle floor; decorative pieces such as Art Nouveau as well as paintings from the second half of 19th century and early 20th century are exhibited. On the top floor; a rich collection of Impressionist and Neo-Impressionist works are displayed.

Architect Victor Laloux kept the train station made of iron and glass behind a finely engraved stone front which imitated classic architecture of the past. Inside of the building which also includes a hotel is generously decorated (Barker, 1999).

The transformation of the station into a museum was accomplished by ACT architecture group, made up of M. Bardon, M. Colboc and M. Philippon. Their project was chosen in 1979 out of six propositions (URL-19). Decorative motives insistently used all around the museum constitute exemplify the historicism of the post modern architecture of the design (Barker, 1999). (Figure 49-54)
Circulation Plan of Orsay Museum and Spatial Experience

The museum transformed from a train station dating back to the 19th century draws the attention of the visitors and offer an outstanding architectural experience that may rival to the art and cause them to lose their ways. It is described as a typical post modern museum because it leads to unavoidable confusions and feelings of being lost in a labyrinth.

The design of the museum represents a certain deviation from luxurious and unique architecture of Laloux. The main change made under the huge glass and iron dome of the train station is a pair of stone structure running along as two small but closed galleries. This is just what a visitor notices when he enters the station on the west gate and goes downstairs to main exhibition area with a stair and with the tracks in the middle rising up with steps and ramps the visitor can continue his visit (Barker, 1999)

Although the galleries on the top floor are plainer, the galleries on ground floor are more complex. A critique who made a statement at the time of the opening of the museum said “In this museum; nobody can see a group of paintings in a plain and straight place either a pillar intervenes or elevation difference interferes or an opening in the wall or something like that occurs.” (Barker, 1999) Magnificence of the station which is very hard to analyze has lost its identity with some divisions but most importantly a place regarded by the visitors as if unplanned has been designed (Atagök, 2000).


Figures 52-53. Orsay Museum, Section and Plan, (Source: URL-20, URL-21)

In the universal place which the visitors arrive at after the entrance; galleries can be visited with a multi alternative visit route. When section of the museum is analyzed; it is seen that the section has been planned as a vivid and living section of a building with galleries placed symmetrically in the universal place, terraces and bridges under the decorated doom.
Quai Branly Museum, Jean Nouvel, Paris, 2006

With its mass construction and the design of indoor circulation area; Quai Branly Museum is a design of recent history that features urban design principles, earns Paris a symbolic character and produces distinctive solutions. In its design reminiscent of narrow long shadow of Eiffel Tower; one of the significant points is that it emerges as a meeting point in the city with gardens, plants and green sites.

Tall glass paneling that faces north and parallels to the building and the longitudinal garden of 800 square meters where 15000 plants from 150 different species are seasonally grown isolate the garden from the busy street in front of them. The City garden functions as a surprising and inviting garden that includes an amphitheater of 18.000 square meters successfully added to the urban structure for open air performances and seminars. 29 box-like halls of different sizes and colors that protrude from north frontage constitute small galleries open to busy visitors outside. There is ticket-sale point in the unit under main exhibition platform that is 210 meters long and rests on supports which holds it 10 meters above the ground (Demeude, 2006), (Nouvel, 2006). (Figures 55-57)


Circulation Plan of Quai Branly and Spatial Experiences

Circulation scheme designed from the entrance can be thought as a spatial journey formed with Le Corbusier’s promenade architecturale. Visitors follow the cylindrical structure under the bridge in the garden and reach the entrance through curved pathway. Inside the white cylindrical space; there are entrance lobby, temporary exhibit spaces and ramp running into the main exhibit space. Spatial journey in the building starts with a ramp of 180 meters long running around oval glass tower which is located in white and luminous entrance lobby and in which musical instruments are exhibited. Continuously changing, unexpected and illuminated graphics reflected on the grey floor of the ramp add dynamism to the journey. With the end of illuminated graphics reflected on the grey floor; a long and narrow corridor animated with hot colors starts.

With the circulation space that transforms the color from grey to hot colors; a universal hall welcomes with colored, statue like three mezzanines of Quai Branly. This universal hall contains main exhibit collections from Australia, Asia, Africa and America being separated by four primary colors. Being separated from main circulation area with a zigzag; collections can be
visited through a circulation route chosen at will. From the primary collection floor, three mezzanine galleries can be reached. The mezzanines arise over the platform as if they were swimming. The bodies are erected in a way that enables them to seem like statues (Anonymous, 2011). Different from the gallery spaces constructed with rooms added each other; Quai Branly provides perspectives that differentiate at each point. In contrast to the familiar white and neutral colors of the modern museums; hot colors used inside and outside the museum make Quai Branly an experimental art object by putting it out of the common museum perspectives (O,Doherty, 2010). (Figures 57-70)


**Figures 68-70. Quai Branly Museum, Section, Circulation Areas in Ground Floor Plan and 1. Floor Plan, (Source: Yapı, 300)**

**Results**

Museum architecture, geometry of circulation area, circulation routes, cross-section continuity, sectional continuity, continuity in circulation area criteria as evaluated with the circulation area of present-day museum new design approach is evident in fiction.

**Geometry of the circulation area:** It is remarkable that circulation areas of the museums of pre-modern architecture like Uffuzi, Louvre, Altes museums were generally designed in regular geometric forms. Although circulation areas of the museums of modern architecture were generally designed in regular geometric forms; circulation areas were rarely planned in irregular geometric forms. Today; most of the museums (for example; Kiasma Museum, Berlin Jewish Museum) contain circulation areas designed in irregular geometric forms as in the case study of Branly Museum (Ataoglu, 2009).

**Circulation routes:** Circulation route-alternatives were assessed under the titles of limited alternatives and multi alternatives in the circulation routes. In
line with the observations and experiences; it may be argued that circulation routes in the museums constructed during pre-modern era (Uffizi Museum, Louvre, Altes Museum etc.) were peremptory and provided limited alternatives. On the other hand; it may be established that the museums constructed during modern era offered circulation routes designed with flexible plans and limited alternatives. As in the case-study; for examples, Pompidou Center, Orsay Museum, Quai Branly, circulation routes in the museums constructed during post-modern era may be multi-alternative.

**Sectional continuity:** Sectional continuity was analyzed in terms of regular and repetitious spaces and irregular and differentiating spaces on each floor. It may be argued that in the museums built during pre-modern era; floor plans forming the sections were of regular and repetitious spaces. As for the museums built during modern era; there were floor plans that break the regularity in sections designed by the masters of the modernism. Yet; these were typologies differentiating on each floor but containing regularity. Bauhaus ecole buildings did not break this systematic regularity. For instance, as explained beforehand, sections of Le Corbusier presented irregularity while Guggenheim museum of Wright had a radical design with regular spaces assembled together. In the Quai Branly Museum; sections are irregular and differentiate on each floor. In the sections of many buildings that draw attention thanks to its novelty created by mass and its contribution to architecture; it is seen that their formations include generally irregular spaces and gaps.

**Continuity in circulation area:** Continuity in circulation area was assessed under surprising perspectives designed with directing and different scenario and constructions. It may be suggested that the museums built during pre-modern era were planned with indoor spatial constructions with the same perspectives all over the building. Masters of modernism created indoor spaces that did not lead to stylistic confusion but allowed a free and flexible planning and thus enabling the perception of the whole space with limitless visual angles. Le Corbusier’s promenade architectural concept seems like as if it is the first example in which the effects of architectural scenarios with which the buildings were constructed still continue but it has still been criticized due to being peremptory. During the post modern era; particularly in the buildings built after 1980s- it was established that indoor spaces are constructed with different architectural designs offering different surprises and perspectives. In the inner photos; Quai Branly Museum provides spatial scenarios in circulation areas, surprising forms and different perspectives in the same area. With the ramp that reaches the platform that breaks through the ceiling and the zigzag pathway and hung galleries; constant architectural travel is planned in a spatial scenario where there are surprising and entertaining spaces added to each other.

In light of that information; it is possible to argue that circulation area of the museum constructed during pre-modern era presented regular geometric plans, regular sections, linear-peremptory routes with limited routes and no alternatives. As for the museums in the Modern Era; these characteristics of the pre-modern era museums loosened. However; during Post-modern Era; newly
shaped circulation areas re-designed by Modern Era were constructed again with a new interior space concept.

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