

NEW FORMATIONS IN CIRCULATION AREAS AND TECHNOLOGY

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ABSTRACT

In the post-modern period, in today's architecture, spectacular and dramatic changes are observed in the formation of buildings and the organization of interior space. Even though these dramatic changes draw attention in the forms of structures at first glance, when interior space organizations and circulation areas are analyzed, radical changes are identified in design strategies, scale, geometry, perception, and size of circulation spaces. Circulation spaces of today, which take form around large and complex atriums, are designed with ramps, bridges, transparent elevators, stairs, escalators, and take shape with expressions of speed and dynamism which reflect spirit of the age. These new, exciting, interesting, surprising and dynamic circulation areas, which offer experiences very different from ordinary circulation areas designed with the traditional and conventional concept, take nourishment from computer technologies, new materials, new structures and new technologies.

Key words : Spatial circulation design, Spatial scenarios, Technology

1. INTRODUCTION

Architects, particularly in their post-1980 designs, have been striving to design interior spaces which are not easily perceived with orthographic means such as plan and section. This search and differentiation has made itself felt especially in circulation areas. In these structures, space is not formed within only one perspective but it consists of several perspectives by combining a lot of spaces, one on the top of another and based on different scenarios.

2. NEW FORMATIONS IN CIRCULATION AREAS

New space organization in circulation areas produces new spatial experiences with the formation alternatives stated below:

- Spherical and amorphous forms
- Making borders obscure

- Irregular openings on cross sections
- Irregular geometric floor plans
- Striking colours and textures
- Visual illusions designed on mirror surfaces.
- New materials, new structures and their facilities
- Changing circulation elements formations (stairs, escalators, elevators, ramps, bridges)

2.1. Spherical and amorphous forms

In today's post-modern architecture, with the development of new materials, new technologies and carrier systems, huge buildings are constructed which cover large spaces under one roof after large spans are passed. Particularly, in post-1980 structures, it is observed that interior space is designed with surprises and perspectives changing within different architectural scenario fantasies. Spatial scenarios in circulation areas, surprising formations in the same place create exciting formal organisations in the space. Modular forms and fragmented modular forms or amorphous forms in interior space create new and original designs in circulation areas which take shape under a big roof. (Figure 1)

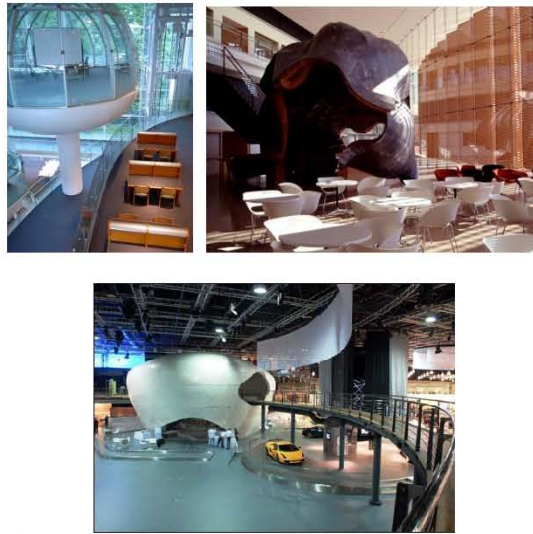


Figure 1. Seikei University Library, Shigeru Ban, Tokyo, 2006; Carl Icahn Laboratory, Rafael Vinoly, New Jersey, 2003; Doğuř Automotive, Kocacıklođlu Arcitecture, İstanbul , 2008

2.2. Making borders obscure

Circulation areas conventionally consist of halls, corridors, courts and atriums that intersect each other with right-angled surfaces. Unlike this conventional formation, spaces in circulation areas where corners disappear and borders become vague create alternative and original formations. (Figure 2)



Figure 2. Pierres Vives, Zaha Hadid, France, 2012; New Kyoto Town House, ALPHAville, Kyoto, 2011; Villa NM, UN Studio, New York 2007

2.3. Irregular openings on cross sections

It is possible to say that in usual conventional structures, in which traditional construction techniques are used, floor plans that form the section are piled up one on the top of another as smooth spans repeating each other. A formation created by irregular spans is observed in sections of a lot of structures which attract attention with their form and contribution to architecture. Today's technology, carrier systems, new materials, and steel technology ,that makes large spans possible, enable the formation of structure sections of these unusual designs with irregular spans.

For example, Rem Koolhaas's Berlin Netherlands embassy is a cubic mass. In this simple cubic structure, an interesting spiral structure is designed in which the ceiling suddenly turns into the floor and height of sections varies on every floor.

As another example; circulation is the main theme in Montessori College design. In the college, forming visual connections between various areas is one of the design principles. In order to enable social interaction between the users of the structure, staircases and bridges connecting different platforms are placed in a position that establishes visual relations in the section (Hertzberger, 2003). (Figure 3)

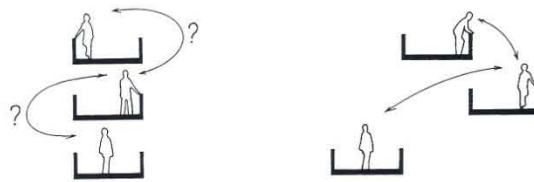
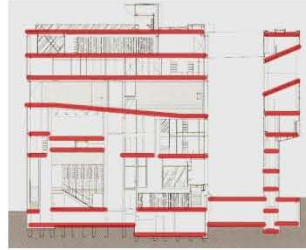


Figure 3. Embassy of the Netherlands, Rem Koolhaas, Berlin, 2003; Montessori College, Herman Hertzberger, Amsterdam, 1999

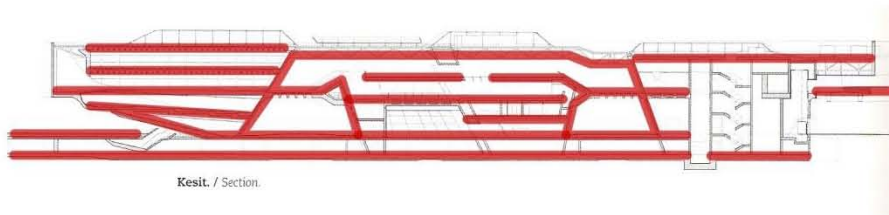


Figure 4. Phaeno Science Center, Zaha Hadid, Germany, 2000-2005

Phaeno Science Center, described as the transformation of feelings of exploration and curiosity into a concrete object, has an unusual volume and is based on a structural logic. During the planning, floors were not piled up one on the top another or empty halls were not formed by passing through large spans from one end to the other. In the structure, volumes were formed with conic structures stretching both inwards and outwards (Hadid, 2005). (Figure 4)

2.4. Irregular geometric floor plans

Today, it attracts attention that circulation area geometry of structures which stand out with their original circulation solutions are planned in undefined geometric forms with analyses on the plan plane.

In both of the structures given as examples, circulation areas are designed to be specific public places where social activities are carried out rather than being ordinary areas connecting units to each other in a functional way. Circulation areas holding this quality are designed in a random manner aimed at increasing visual relations rather than in a predetermined form. This dynamism is supported with irregular geometric floor plans.

Architecture and Art Building, designed by Roto Architects, contains a canyon-like social area between two rectangular blocks. All social activities are performed in this area, which can be seen from everywhere and every floor. This versatile place is a place of intense learning and teaching. Fluent interior spaces focus students on cooperation and encouragement and create countless areas for social change and dialogue in educational development (Pope, 2006). It is remarkable that the building with these features has a circulation area that is random and undefined geometric. (Figure 5)

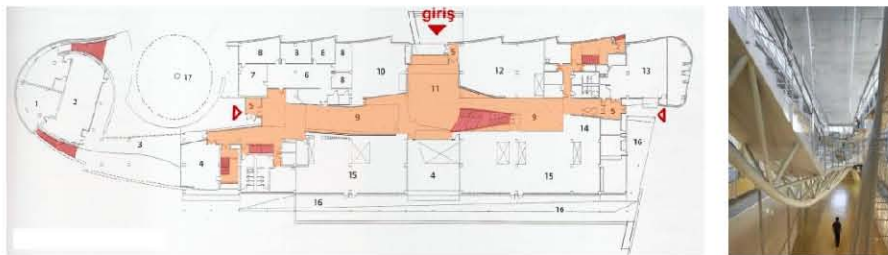


Figure 5. Architecture and Art Building , Roto Architects, USA, 2003-2005

Iowa University School of Art and Art History contains outlines formed by organizing spaces instead of real and traditional volumes. The main horizontal passages surrounded by glass walls display ongoing studies in various places while creating gathering places. The central part from which one can watch the ongoing studies is described as a social condenser (Holl, 2007). The staircases in the building which outstand with a different shape is described as a forum and located in the central part which is described as a social condenser. Formless geometries are used in the architecture, settlement of space and the combination of linear lines of the School of Art and Art History. (Figure 6)

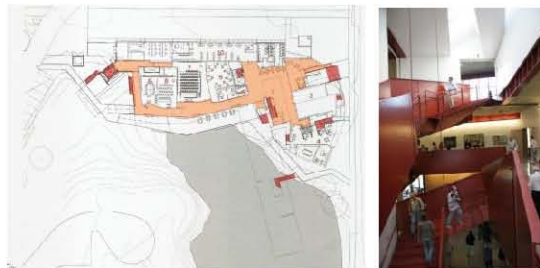


Figure 6. School Of Art & Art History, Iowa University, Steven Holl, USA, 2006

2.5. Striking colours and textures

Colour is used in architecture to emphasize the character of a building, draw attention to its form and material and to make its parts explicit (Rasmussen, 1994). Colour can be effectively used as a determiner of the borders of the space and an organizer and orientator of circulation areas by emphasizing the form. Surfaces with

different textures display a feature of determining circulation by pointing out that the function changes and with their feature of defining borders. In today's buildings, strikingness of circulation areas and staircases are powerfully emphasized with the dramatic colour tones and different textures. (Figure 7)



Figure 7. Library and Media Center, Herzog & De Meuron, Cottbus, Germany, 2006; Red Town Office, Taranta Creations; Hago Dental Office, Estudio Arquitectura

2.6. Visual illusions designed on mirror surfaces.

The start of using glass in interior and exterior spaces makes it possible to create transparent spaces. While glass material creates feelings of infinity and transparency in spaces, mirror adds depth to the space. Using mirror and glass as coating material on the ceiling and wall surfaces in circulation areas, atriums and staircases create designs in which it is not clear where the stairs start and which floor they reach, and in which form-floor relation is lost. With this formation, a brand-new interior space that misleads and confuses perceptions is created. (Figure 8)



Figure 8. Conservatorium Hotel, Piero Lissoni, Amsterdam, Netherlands; Festival Walk, Retail, Office, Arquitectonica, Hong Kong, 2003; Akademie, Behnisch and Partner, Berlin, 2005; Prosecutor's Office, Architects Of Invention, Tbilisi

2.7. New materials, new structures and their facilities

Developments in construction materials, diversity of new materials, new structures and their possibilities diversify the designs of circulation areas and circulation elements. Development of reinforced concrete, steel and computer technology enables to pass large spans and create curvilinear forms. The circulation areas in

Frank Gehry's titanium-coated organic-formed Bilbao Guggenheim Museum offer an unusual geometry and experience.

In addition to the new materials such as plexy materials, titanium, aluminium composite materials and acrylic, traditional materials attract attention with their new uses. For example, wood is baked and its strength is increased thus glued, stratified wood suitable for curvilinear forms can be obtained. Strength of glass, a fragile material, is increased and also used as a structural material. natural Stones are treated with laser technology and staircases are designed in sculpture esthetics. (Figure 9)

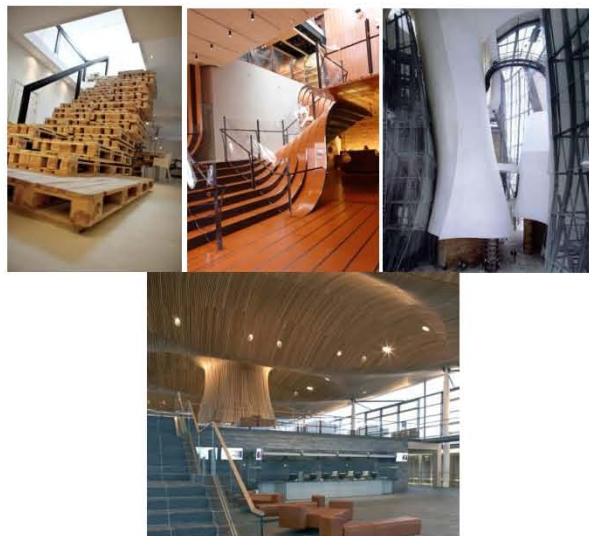


Figure 9. Brandbase Pallet Project, MOST Architecture; Lonchamp Store, Thomas Heatherwick, Soho; Guggenheim Bilbao Museum, Frank Gehry, Spain, 1991-1997; National Assembly for Wales, Richard Rogers Partnership, England, 1998-2005.

2.8. Changing circulation elements formations (stairs, escalators, elevators, ramps, bridges)

While circulation elements were ornamented with decorative elements in pre-modern periods, today staircases, escalators, elevators, ramps and bridges have a surprising richness with their form, structure and material. Designers' search for originality, innovation and excitement create solutions specific to the building in which characteristic circulation, staircases and ramps form the focus. (Figure 10)



Figure 10. Didden Village, MVRVD, Rotterdam, 2007; Stairs, Gabriella Gustafson and Mattias Stahlbom; Music Theatre, UN Studio, Graz 1998-2008; City Hall, Norman Foster and Ken Shuttleworth, London, 2002; Parisian Apartment, MAAJ Architectes, Paris, 2010

3. CONCLUSION

As a result, circulation areas, which have undergone changes and breaking points on an evolutionary line, have turned into exciting, interesting and surprising fantasy areas in today's interior space in Post-modern buildings. It is possible to say that factors such as designers' search for originality, excitement and innovation, employers' demand for difference, deconstructivist discourses, contribution of computer technologies to the design process, convenience of production provided by modern construction material and technology are the causes of the new and different formation in circulation areas.

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