

An Analytical Study of Deconstructivism and Parametricism: Through the work of Architects

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ABSTRACT

Theories have helped architecture to evolve and transform a long way since ages. The research paper focuses on the study of two theories of post-modernism contemporary architecture specifically Deconstructivism (evolved since 1960) to the present global style called Parametricism (evolved since 1990). These theories tend to drift away from the basics of modern architecture such as 'form follows function', 'purity of form' and 'structural honesty'. Evolution and important characteristics of Deconstructivism and Parametricism has been discussed and compared. The study leads to an analytical approach based on selected parameters, which are formulated to understand the concept and theories through case studies. These parameters helped in exploring the holistic approach towards the design process adopted by master architects namely Frank O. Gehry, Zaha Hadid, and Patrik Schumacher. The methodology adopted understands the philosophies of both the theories culminating into an analytical study based on selected case studies. The parameters are based on design considerations inclusive of socio-cultural and environmental aspects. The justification for selecting the parameters is done on the basis of its practicality. The observations derived from the study help in the critical appreciation of both the theories through the works of renowned architects.

Keywords: *architecture, architects, design, theories, parameters*

1. INTRODUCTION TO CHANGING PHASES OF ARCHITECTURE:

"We shape our buildings; thereafter they shape us," Winston Churchill.

Architecture plays a very important role in shaping the built environment. It is a discipline of art and science. coming of technology it has become much more technical. It requires a team of expert or stakeholders such as architects, civil engineers, structural engineer, electrical engineer, mechanical engineer and so on. Thus it became a 'multidisciplinary' field. Today it has reached to the global style called as Parametricism. "Deconstructing is to deform a rationally structured space so that the elements within the space are forced into new relationships"(7). Similarly, Parametricism, as the name suggests, is based on the parameter phenomenon.

These parameters have to be identified and the use of deep-rooted animated technology. Parametricism finally brings to an end the transitional phase of uncertainty engendered by the crisis

of Modernism and marked by a series of relatively short-lived architectural episodes that included Postmodernism, Deconstructivism and Minimalism [1].

Case Study-1: Guggenheim Museum in Bilbao, Spain by Frank Owen Gehry

One of the very first examples of Deconstructivism is Guggenheim Museum in Bilbao, Spain. The museums belong to the Solomon R. Guggenheim Foundation. It is an example of modern and contemporary art designed by Canadian-American architect Frank Owen Gehry. It was inaugurated in 1997 and it was constructed on time and budget, which is rare for such type of architecture. Gehry has always designed through sketches and later moved on to technology. Architect Philip Johnson described it as "*the greatest building of our time*". Three different materials such as titanium, glass and limestone are used to fulfill the aesthetic quality. It also helps light to penetrate and react to the sun and the weather. These materials are used as per their functional requirement, for example Titanium cladding for galleries, limestone for public facilities and glass used to insulate both acoustically and thermally.

Museum is integrated into the city in terms of height and material used, also has a “sculptural roofscape responsive to the city’s undulating topography”. The building is built around a central axis, it has load bearing walls and ceilings. In 2001 it received the Outstanding Structure Award. It is situated on a plot of 32,500 m², of which 24,000 m² are occupied by building. 9,066 m² areas is devoted to exhibition spaces. The nineteen galleries and ten galleries follow a classic orthogonal plan and irregular shape and both can be easily identified from outside by their exteriors such as stone finish and swirling organic forms and titanium cladding respectively. Exhibition spaces are columns free which given flexibility in display. Architect is inspired by the shape and texture of a fish. Therefore, the museum can be said as ‘work of art’ or the ‘sculpture’ in itself. The museum exhibits the works by Spanish and international artists. The socio-economic impact of the museum was too deep in the city. After opening it became the popular tourist attraction with visitors around the globe. In the initial 3 years almost 4 million tourists visited the museum and generated almost 500 million in profit. Therefore, the "Bilbao effect" refers to how the museum transformed the city itself. Even today the Museum remains an iconic structure for its complexity and form.

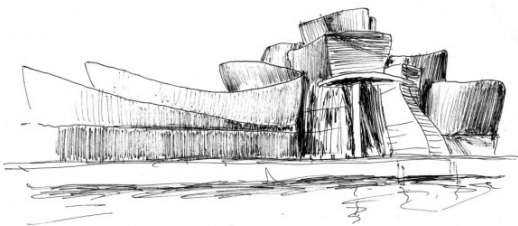


Figure 1: Sketch of Guggenheim Museum [4]



Figure 2: View of the museum [4]



Figure 3: View of the museum, Bilbao [4]



Figure 4: View of the museum [4]

Case Study-2: Heydar Aliyev Center, Baku, Azerbaijan by Zaha Mohammad Hadid

The building is designed by the famous Iraqi-British architect Zaha Hadid after the competition in 2007. She is known as “queen of curve”. She has received the Pritzker Architecture Prize in 2004 and the Stirling Prize in 2010 and 2011. She is internationally famous for both her theoretical and academic work. After graduating in 1977 she opened her own architectural firm in 1980 which was a big challenge. Frank Gehry describes the architect as "an extraordinary force of nature", while designer Donna Karan heaps praise on her "female sensibility" and "goddess's touch". Her thinking about spatial issues sets her apart from the crowd; her firm has 350 employees and has handled 950 projects in over 44 countries. She pushes the boundaries of architectural and urban design with new spatial concepts integrating the urban landscapes. She works in various fields of design ranging from urban scale to interiors, product design and furniture design.

The building is designed for nation’s cultural programs and for sensitivity towards culture. There is a continuous relationship between topography, building envelope and interiors. Fluidity in form-formation goes with the natural topography. Space frame structures are used for construction as they provide column free spaces. It has incorporated urban fabric and tradition Azeri culture. The centre is designed to express the sensibilities of Azeri culture through the spaces and the built-form. The form of the centre merges with the landscape and its natural topography.

The functional spaces and the built form are created by folds in a single continuous surface. The free flowing form has given an opportunity for interconnected cultural spaces. The building has become a signature landmark because of its innovative design and has created its own identity. Glass fibre reinforced concrete and Glass fibre reinforced polyester were used as ideal cladding materials. Architect has done studies on surface geometry for establishing the building in the given context. Lighting has been given a due care to merge with the fluidity within the interior and exterior of the building.

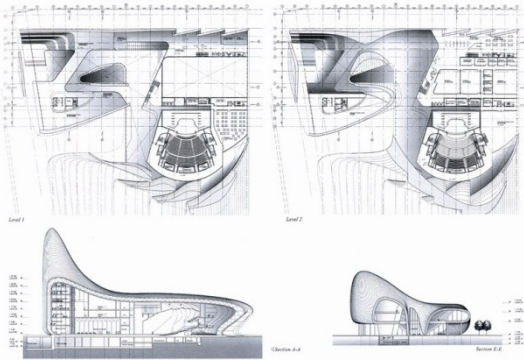


Figure 5: Plans of Heydar Aliyev Center [5] [4B[Baku, Figure 6: Front elevation of Centre [5]



Figure7: Closure view of centre [5]

Figure 8: Night view of auditorium [5]

Case Study-3: Parametricism by Patrik Schumacher

Patrik Schumacher and Zaha Hadid has explored the possibilities of parametric design. Parametricism is a new style after modernism, reveals in all scales from architecture, interior design to urban design.

Parametric design is the latest development in CAD software, and refers to the inclusion of parametric data embedded within 3D objects (i.e., all the parameters, such as height, depth, thicknesses, weight, and even attributes such as model numbers and materials). The objective of such technology is to reduce drafting time caused by having to make multiple corrections and additions to multiple drawing files, which is common in regular CAD software, such as Autocad [2].

Some of its principles are soft forms, communication between activities whereas negatives are lack of zoning, lack of repetition and rigid forms. Architects are able to do the in-depth study of materials, structure properties, form formation and so on with the help of parametric software. Before becoming up of this software architectural design was an evolution whereas today it has become a generative and reactive process. Such tools also bring complexity in design issues and require deeper understanding of geometry, mathematics.

Schumacher added: ‘Parametricism is a fundamental rethinking of the primary constituting elements of architecture... It is not just one of many tribes, even empirically. It is the largest of the movements and directions [within architecture] and the only truly innovative one in terms of offering design solutions and in terms of making an impact on the built environment’ [3].



Figure 9: Parametric design building [6]



Figure 10: Parametric design building [6] Figure 11: Model of Parametric design [6]

2. CONCLUSIONS

Theories proved that Architecture is in a continuous process of evolution from handmade drawings to software drawing. Sketching plays a main role in architecture as conceptual designs are conceived during the initial stage only. There is a co-ordination in the development of design between sketching and the thinking process but takes its own time. Whereas software’s skips initial stages of sketching and are quite fast in delivery but requires sound knowledge of geometry and mathematics.

For analytical study architectural designs of selected architects, few parameters have been established such as understanding their philosophy, ideas and inspirations, and aspects such as functional, spatial, structural, material, aesthetics, economics, user, socio-cultural and

sustainability. But all these parameters change with time and technology available. Each architect has its own way of interpretation and analyzing various solutions for a single problem.

Deconstructivism, developed since 1960, has in the advent of time, proved itself and is supported by very strong aspects like form- generation, functionality, material and construction technology with structural logic. Whereas, Parametricism, on the other hand which is a new style developed since 1990s, has yet to be established in terms of material, construction and structural logic. The psychological and social acceptance by the users yet remains to be answered. Parametricism is the step ahead of Deconstructivism in terms of technology, geometry, mathematics, speed of construction and societal aspect. Sustainability and innovation plays a major role in both the theories and thus are avant-gardes of their time.

The future of architecture lies in the hands of educators as to how they teach- interact with the younger generation and how the viewers perceive the architectural designs.

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