

# DESIGN APPROACH OF ZAHA HADID FORM VOCABULARIES AND DESIGN TECHNIQUES

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**ABSTRACT**-Zaha Hadid(1950-2016) an Iraqi British architect whose works are a combination of the culture, identity of Iraq and the new thoughts, architectural and artistic schools like Suprematism, Deconstructivism, and Fluidity of Arabic Calligraphy. Her early projects reflected Deconstructivism, a non-Derridean philosophy which is based on ideas from various sources like Suprematism, Constructivism, Parametric architecture or nature to create a sculptural image. She was influenced and inspired by Rem Koolhaas, Elia Zenghelis, Kazimir Malevich, Russian Constructivism, Chinese and Japanese architecture; nature was her dominant source of inspiration.

Though she is called the Female Modernist of the Twenty-First Century, she understood the roots of modernism, believing in new structure, seeing things in new ways and representing the reality of modernity but she disliked the repetition principle of modernism which she portrays as mass production of the Industrial period. Her designs are a continuation of the modernism breaking down the inherited rules of architecture, which represents freedom in design.

The first sight of her architecture gives the impression of a strong and elegant form where external appearance is given the priority followed by the functional accomplishments, circulation, lighting, etc. She perceives architecture as an art, which deals with human emotional experience like excitement, joy, adventure, etc.

She pushed boundaries of design, defied architectural rules and conventions and builds what used to be unbuildable. She created her own radical rules of design from her own experience and rationalism. She searches for aesthetics in art, nature and architecture and applies them in design. This eager of searching helps her to obtain some primary skills diligently which became her own Design Techniques.

**Keywords:** Suprematism, Deconstructivism, Abstraction, Fragmentation

## BACKGROUND

Over the last few decades, there has been a change, instability and technological developments in all sectors including architecture. With technological innovations in structures, materials, computer programs, architects have become more creative and imaginative without fear of the difficulties in implementation and responding to the complex and chaotic thinking of the era. This resulted in new trend called Deconstructivism characterized by antigravity, non-geometry, complexity and fragmentation.

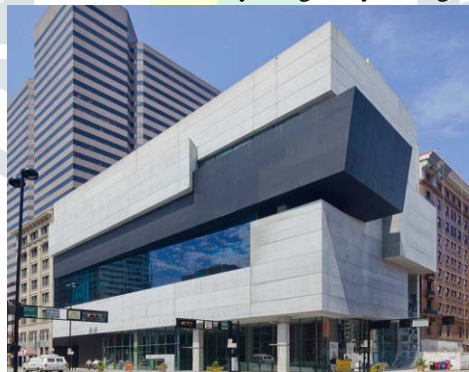


Figure 1: Rosenthal Center of Contemporary art, Ohio (2003)

In 1988, the Architectural Exhibition of Deconstructivism was held at the Museum of Modern Art (MOMA), New York where seven architects participated; they are Coop Himmelblau, Peter Eisenmann, Thom Mayne, Daniel Libeskind, Bernard Tschumi, Frank Gehry and Zaha Hadid. They defied the logical principles of architecture, did not value function with no purity in form and truth to materials.



Figure 2- Vitra Fire Station, Weil am Heim, Germany

Deconstructivism were broadly categorized into Derridean and non-Derridean architects. Peter Eisenmann, Bernard Tschumi and Daniel Libeskind were Derridean Deconstructivist who were philosophically Deconstructivists who rationalized that human made objects including architecture or philosophy must not be naturalized. They should be conceived as man-made. While non Derridean architects like Rem Koolhaas, Frank Gehry and Zaha Hadid gave their projects a more realistic approach where concepts or ideas are taken from different sources by Zaha Hadid, Rem Koolhaas and Frank Gehry were inspired by Suprematism, Constructivism and nature respectively developing the form into a sculptural image and function follows form.

Zaha Hadid(1950-2016) an Iraqi British architect whose early projects reflected Deconstructivism – Non-Derridean philosophy. Her projects reflect complexity, emotionality, creativity, technological advancement, innovation, etc. She studied Architecture in AA school of Architecture, London under Rem Koolhaas and Elia Zenghelis and was influenced by Russian Constructivism, a utilitarian philosophy where beauty is more important than function.

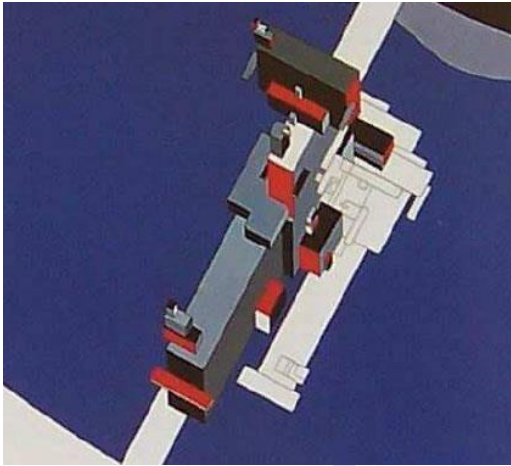


Figure 3 - Malevich's Tektonik, London 1967-1977



Figure 4- Painting by Kazimir Malevich

Zaha Hadid was a Deconstructivist architect initially, with her Graduation Project named as Malevich Tektonik (1977). It was hotel project on the Hungerford Bridge, influenced by Kazimir Malevich's painting, his thoughts of antigravity and using pure geometric forms.

Her later projects were either characterized by Abstract and Fragmented forms or Fluid and Free forms. She has designed over 950 projects in 44 countries. Her success could be attributed to her innovative designs, unique radical concepts, design strategies and design techniques.

#### Approach to Design

Zaha Hadid approach to design was unique where her process was started by a complete research of the site and functions of the project followed by form notions, Design techniques, circulation, function, natural lighting, embedding form with the context and finally the Interior Design.



Figure 5- Suprematist painting by Zaha Hadid

She did a rigorous research on the site, natural environment, neighbourhoods, political and social history of the place, functions of the projects, etc.

Form notions were inspired from the site, nature and phenomenological events, art, architecture and computing programs.

1. Site: The ideas of the form were related to the land-form, skyline, neighborhoods, circulation, road, history of the city, political events, etc
2. Nature and Phenomenological events: Form inspirations were from topography, contours, sand dunes, sea creatures, living organisms, etc
3. Art: Creativity idea was taken from Suprematism, Arabic calligraphy, Chinese painting, integration of architecture into landscape



Figure 6- Form inspirations from nature

4. Architecture: Influenced by the architectural works of Yakov Chernikov, Mies van der Rohe, F.L. Wright, Oscar Niemeyer, Russian Constructivism, Chinese traditional architecture.
5. Computing programs: Developed the Parametric form to create complex, porous, form which are supple and malleable. The main Design Technique used in her projects were the Play of Light by manipulating building masses, avoided cladding and usage of exposed concrete. The other common technique was Flight technique or Defying Gravity. Circulation and Function were ensued next. She studied circulation as if she moved through every nook and corner of the building. The circulation system was unique as it allows the visitor to move automatically and smoothly through fluid spaces.



Figure 7 - Heydar Aliyev Cultural Center, Baku (2007)



Figure 8 - MAXXI museum of XXI century Art, Rome (2009),

Skin penetration was designed for natural reflective light to match with the form. Then she embedded the form with the context by connecting the surrounding with architecture, imitating the natural form, dealing with site topography, landscaping, etc. Finally, she did the Interior design which displayed a continuity between the exterior and the interior.

**Design Techniques**

Zaha Hadid impelled the boundaries of design, defied architectural rules and conventions and builds what used to be unbuildable. She created her own radical rules of design from her own experience and rationalism. She searches for aesthetics in art, nature and architecture and applies them in design. This eager of searching helps her to obtain some primary skills diligently which became her own techniques.

1. Abstraction and Fragmentation
2. Idea of the Ground and Gravity
3. Landscaping the surrounding
4. Layering
5. Play of light
6. Seamlessness and Fluidity



Figure 9 - Peak Block elements - painting

**1. Abstraction and Fragmentation**

She tried perceiving things in a novel way, where the forms were portrayed in volumes and shapes and their organization was manipulated by overlapping or aggregation.

Sometimes she fragmented the blocks to create new geometries or patterns and distorted them to multiple perspective masses.



Figure 10 - Vitra Fire Station, Germany (1993)

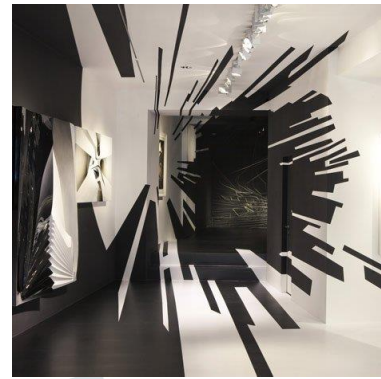


Figure 11- Gmurzynska Gallery, Zurich (2010)

Collision

The collision between two geometries causes damage and devastation which results in deformation in form and appearance. Eg. Vitra Fire Station, Weil am Rhein, Germany

Explosion

The explosion starts from a focal point radially to all directions causing damages. Eg. Gmurzynska Gallery in Zurich where the explosion expressed in black and white painting at the walls, ceiling and ground creating a sense of movement through the explosion.



Figure 12 - Maggie's Centre Fife, Victoria Hospital Scotland 2006

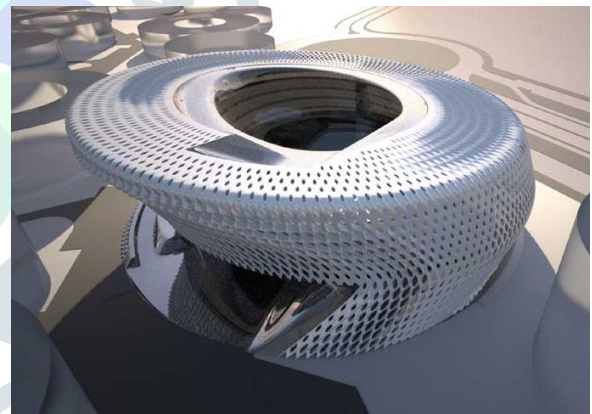


Figure 13 - Madrid Civil Courts of Justice (2007)

Folding

Ground extended and folded to form the walls and ceiling



Figure 14 - Victoria city Areal, Berlin, Germany (1988)

Twisting

Squeezing and Twisting Technique used in Madrid Civil courts, Spain

Deformation

Designing in a perspective way with three-point views created as a distortion of diminutions. Eg. Victoria City Areal, Germany.

**2. Idea of the Ground and Gravity**

Figure 15 - Pierre Vives, Montpellier, France (2012)

Most of her projects break free from the ground, defying gravity or floating ground floor. She said that the static idea of the ground restricted the modernist architects to produce same architecture for a period. She learned this technique from Suprematism.



Figure 16 - Eli & Edythe Broad Art Museum, Michigan State University (2012)

Deep emanation

The masses had deep emanation rebelling gravity.

Inclined mass

She tilted the building to one side in a diagonal manner, as if the wind blew it to one direction with the ground intact.

Ground extension

She extended out the form leaving the natural topography as it is, defying gravity and creating extraordinary view.



Figure 17 - Villa for Golf and Spa Resort, Copenhagen, 2011

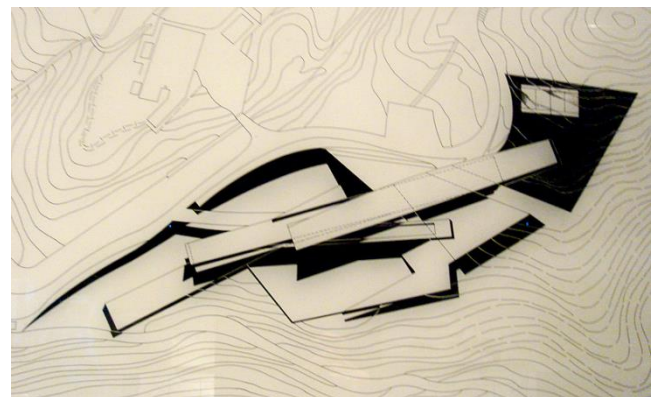


Figure 18 - Peak project, Hong Kong 1983



Figure 19 - Surfer's Paradise Transit center, Queensland, Australia (2007) Figure 20 -Inspiration from tree roots

Manipulation of different floors

She used multigrad system to manage the plans.

Liberating the ground

She energized and liberated the ground by elevating the building in different ways.

**3. Landscaping the surrounding**

Landscaping is a complementary part of the urban zone image enhancing the quality of each other. Zaha Hadid imbedded and melted he project within the context. Landscaping the project with the environment is likea tree whose roots embed with the surrounding by taking the same shape of the pavement around. It is no longer a neutralbackground to highlight architectural elements but is dissolved with the architecture.

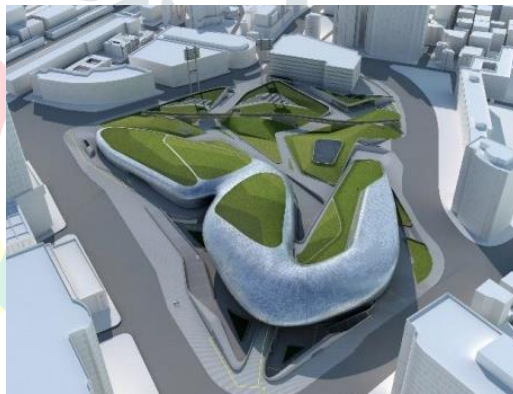


Figure 21 - JesoloMagica Project, Italy (2014) Figure 22 - Dongdaemum World Design Park and Plaza, Seoul, Korea

Elevating the ground: The ground floor was made porous by continuing the landscape to the interior spaces of the project.

Roof landscaping

Landscape is extended and continued through the project.

Melting

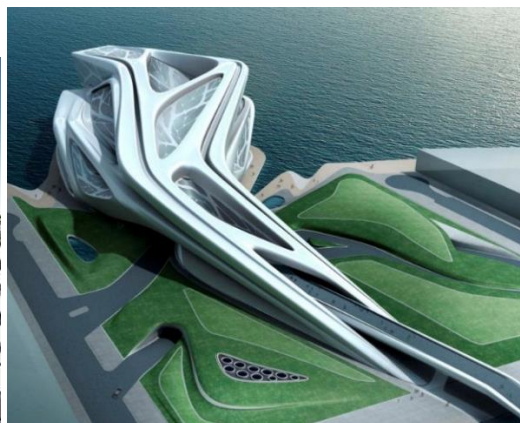


Figure 23 - Beko Complex, Serbia (2009) Figure 24- Abu Dhabi Performing Arts Center (2009)

Making the building walls to meet the ground and form part of its landscape



Figure 25 - Heydar Aliyev Culture Centre, Azerbaijan (2012)



Figure 26 - Stone Towers, Cairo, Egypt (2008)

Vanishing

Fading idea was used in many of her projects. This technique draws our eyesight gradually from the site to the building making a strong connection

Walls extension

The wavy walls folded to meet the ground forming the pavement.  
The Tower walls refract to form the roof of retail parts which continue to form the Delta landscape.

Using one colour

Zaha Hadid uses only one colour through all her projects

Pavement

Pavement is the same colour of the building



Figure 27 - Vilnius Museum, as a way of landscaping. Vilnius, Lithuania (2007)



Figure 28 - Darat King Abdullah Art Cultural center, Amman, Jordan (2008)

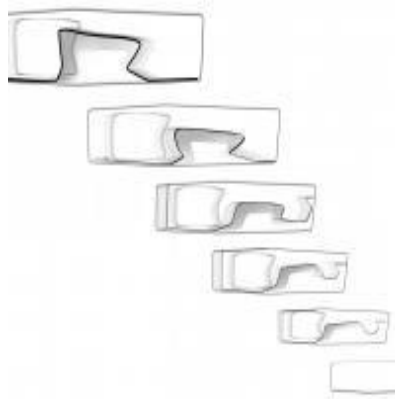


Figure 29 - Darat King Abdullah Art Cultural center, Amman, Jordan (2008)

**4. Layering**

This technique creates amazing and complex fluid spaces using voids and spaces by manipulating the interior wall edges especially the main foyer or maneuver the floor's position in terms of superimposition to create energetic forms. It deals with building floors as separated layers or levels to lightly ignore the grid of the lower floor.

**5. Play of light**

This technique displayed the play of masses under the factor of daylight. The masses were manipulated by buckling, sinuosity, extrusion, fragmentation, abstraction, porosity. The shadow adds motion and life to the elevation. She learned this techniques from nature especially the mountains with light and shade effect.

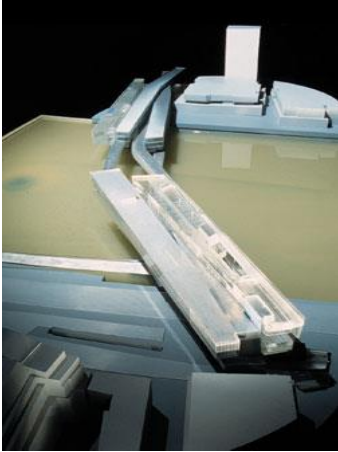
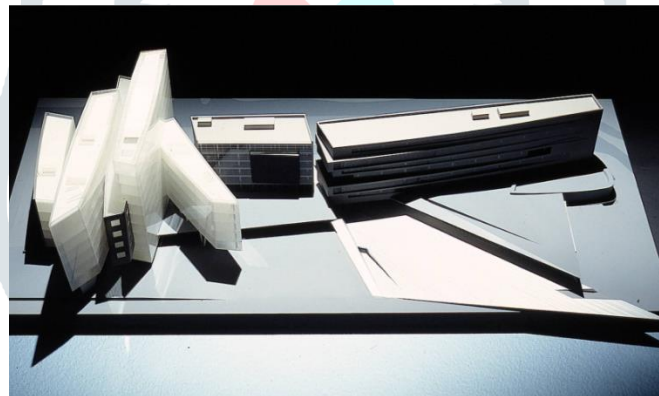


Figure 30 - Habitable Bridge, London (1998)



Figure 31 - Landesgartenschau, Weil am Germany (1999)



Dusseldorf's Harbour: Zolhof 3 Media Park Project, Germany

**6. Seamlessness and Fluidity**

This technique was inspired from the Sumerian village landscapes of Iraq which happens between reeds, water and sand.



Figure 33 - Rabat Grand Theatre, Rabat, Morocco, 2016





Figure 34- Heydar Aliyev Culture Centre, Azerbaijan (2012)

### Conclusion

Zaha Hadid buildings nowadays are considered one of the most attractive architectural styles in the world such as Heydar Aliyev Culture Centre in Azerbaijan and Guangzhou Opera House and Galaxy Soho in China. Her architecture attracts people and media and it is considered as an indicator for the strength of the country's economy. Full of rebel, mysterious thoughts, rejection of what is norm, and strong will of gaining success, Zaha Mohammad Hadid now is considered as a new architectural school in the 21st century followed by eager generation for scientific innovation and artistic creation. Hadid architecture is the one which defies the rules, pushes the limitations, and builds what used to be unbuildable. Rem Koolhaas, rightly said she was "a planet in her own unique orbit".

### REFERENCES

- I. Reid, L. E. (2009). *Zaha Hadid: The female modernist of the twenty-first century*. Dallas, TX: Southern Methodist University.
- II. Hiesinger, K. B., Hadid, Z., & Schumacher, P. (2011). *Zaha Hadid: Form in motion*. New Haven: London.
- III. Schumacher, P. (2004). *Digital Hadid: Landscapes in motion*. Basel: Birkhäuser.
- IV. Hadid, Z., Noever, P., Ruby, A., & Schumacher, P. (2004). *Zaha Hadid: Architektur*. Ostfildern-Ruit: HatjeCantz.
- V. Fazio, M. W., Moffett, M., Wodehouse, L., & Fazio, M. W. (2013). *A world history of architecture*. London: Laurence King.
- VI. Zaha Hadid: Profile of a Legendary Architect. (2018, May 03). Retrieved from <https://archmarketing.org/zaha-hadid-women-in-architecture/>
- VII. Garcia, M. (2010). MAXXI, Rome: Zaha Hadid Architects. *Architectural Design*, 80(3), 132-135. doi:10.1002/ad.1092
- VIII. Panou, A. (1996). The rediscovery of Russian constructivism in the architecture of deconstruction: The work of Rem Koolhaas and Zaha Hadid (Doctoral dissertation, Thesis (M.Sc. - History of Modern Architecture) - University College London) [Abstract].