

Liberation of form: A stereotypical icon

- Tejeshwi Nemani ,
A/2006/1886 , IVth year Sec-B
SCHOOL OF PLANNING AND ARCHITECTURE

“With its melancholy desire to achieve exceptional forms, have appropriateness and sustainability left of any substance to the new genre of Iconic architecture crying loud for attention.”

Internal Guide : Ar. Moulisri Joshi
External Guide : Ar. Vishakha Kawathekar
Coordinator : Mrs. Jaya Kumar

Contents

Acknowledgements

List of Plates

Chapter 1:

INTRODUCTION

- 1.1 Introduction
- 1.2 Need Identification
- 1.3 Objective
- 1.4 Scope
- 1.5 Limitations
- 1.6 Methodology

Chapter 2:

LIBERATION OF FORM: CREATION OF AN ICON

- 2.1 It's Evolution
- 2.2 What makes them possible?

Chapter 3:

PUT MY CITY ON THE MAP: CITY BRANDING THROUGH ICONS

- 3.1 The Bilbao effect
- 3.2 City Branding: the source of architectural form

Chapter 4:

THE ICON AND ITS TRAILS

- 4.1 Post Bilbao: Icon Icon everywhere
- 4.2 Museum cities

Chapter 5:

AN ICON: BUT A BUILDING?

- 5.1 Performance as a building
- 5.2 Case studies: The birds nest and the Bilbao museum

Chapter 6:

CASE STUDIES AND CONCLUSION

- 6.1 Conclusion and suggestions

Bibliography

Acknowledgements

...I wish to offer my sincere thanks to my Dissertation Guide Ar. Moulisri Joshi and my external Guide Ar. Vishakha Kawathekar who guided me thoroughly with the process of this dissertation and gave me several of their valuable working hours.

I also wish to thanks Ar. Vinod Gupta, Ar. Madhav Raman and Ar. Suditya Sinha for their valuable comments and time.

And Mrs. Jaya Kumar and Mrs. Ranjana Mittal for their Guidance throughout the semester to make this dissertation look like one.

...I have no words to thank my family for making me comfortable at home while I was working on this dissertation.

...At the end, I shall thank Mr. Dissertation for getting over, finally!

p.s. A big thanks to all of my friends Akshat, Ananta, Vikas, Karan and Shashank for pushing me hard to complete this dissertation. May God bless you...

List of Plates

- Fig.1. **Casa Batlló** by Antonio Gaudi
- Fig.2. **Einstein Tower** by Eric Mendelssohn
- Fig.3. **Chapel at Ronchamp** by Le Corbusier
- Fig.4. **Guggenheim Museum** by FLW
- Fig.5. **TWA terminal** by Eero Saarinen
- Fig.6. **Sydney Opera House** by Jorn Utzon
- Fig.7. **Guggenheim Museum** by Frank Gehry
- Fig.8. **Mercedes-Benz Museum** by UN studio
- Fig.9. **Burj Al Arab** by Atkins
- Fig.10. **Swiss Re** by Norman Foster
- Fig.11. **Beijing National stadium** by Herzog & De Meuron
- Fig.12. **Royal Ontario Museum** by Daniel Libeskind
- Fig.13. **Dubai Opera House** by Zaha Hadid
- Fig.14. **Dubai towers** by TVS design
- Fig.15. **Graph of overnight visitors** in Bilbao museum
- Fig.16. **Hotel Palazzo Versace**, Dubai
- Fig.17. **New Art Gallery of Alberta**, by Randall Stout Architects
- Fig.18. **Dubai Opera House**, By Zaha Hadid
- Fig.19. **BMW Museum** , by architect Wolf Prix
- Fig.20. **Cybertecture Egg Mumbai**, by James Law
- Fig.21. **Towers in Malaysia**, by Studio Nicoletti
- Fig.22. **Dubai Towers Dubai** , By TVS Associates
- Fig.23. **Oil company headquarters** , SOM architects
- Fig.24. **The Ren building** , BIG architects
- Fig.25. **Hotel crescent**, by Heerim Architects
- Fig.26. **Kuwait towers** , by firm Atkins
- Fig.27. **Capital Gate**, by architects RMJM
- Fig.28. **Helix hotel** ,by firm Leeser Architecture
- Fig.29. **Botanic Garden** for Hybrid Plant (2006)
- Fig.30. **Euroscrapers** (2007)

- Fig.31. **Symbiotic interlock** (2008)
- Fig.32. **Alogrithimic Housing** (2007)
- Fig.33. **Seascraper Floating city** (2009)
- Fig.34. **Museum of natural history of salt range** (2008)
- Fig.35. **Green Oasis** (2007)
- Fig.36. **Pre History museum** (2006)
- Fig.37. **Natural History Museum** (2007)
- Fig.38. **Emblem tower** (2009)
- Fig.39. **Parametric Housing** (2007)
- Fig.40. **Dallas Landscraper** (2009)
- Fig.41. **Palm Islands** , Dubai
- Fig.42. **Albida tower**, Doha
- Fig.43. **Doha Skyline with Albida tower**, Doha
- Fig.44. **Birmingham shopping mall**
- Fig.45. **Burj Al Arab**, Dubai
- Fig.46. **Sky Restaurant** , Burj Al Arab
- Fig.47. **The Denver Art Museum** by Daniel Libeskind
- Fig.48. **Denver Museum Interior-1**
- Fig.49. **Denver Museum Interior-2**
- Fig.50. **Beijing National stadium** by Herzog & De Meuron
- Fig.51. **Guggenheim Museum**, by Architect Frank o Gehry

Chapter 1:
INTRODUCTION

- 1.1** Introduction
- 1.2** Need Identification
- 1.3** Objective
- 1.4** Scope
- 1.5** Limitations
- 1.6** Methodology

*An iconic building is not functional. Its form produces impractical spaces.
An iconic building is badly made. Its form is too hard to make.
An iconic building is too expensive, and therefore not social.
An iconic building addresses the media. And media are bad. They are liars. An iconic building pulls in tourists. It is basically a big store that is supposed to get as many visitors as possible that spend as much as possible. Capitalism is bad, consumerism is bad, tourism is bad, the iconic is bad. An iconic building is not urban. It's not even real. It is theme park architecture. It is world expo architecture. It is for kids and for stupid adults.¹*

It seems common feelings we all share. The word iconic has become such slang that using it makes us feel uneasy and unworthy. Yet without using the word 'iconic building' we talk about it, practice it, and we aspire for it.

An icon is defined in the Oxford dictionary as a representative symbol of a cultural period. Until very recently an icon was used for the most extraordinary buildings in the human history, which stood above the rest, like poetry rose over prose². It is the untamed use sudden power of technology and feasibility to achieve personal benefit that has turned it ugly into loud attention seeking worthless buildings.

The suddenness of the situation which condensed the process of generation into few years is what interests me the most. Thus this dissertation explores the phenomenon capable to create such a change.

Good or bad the untamed form oriented architecture is a symbol of highest level of complexity solving, and has too much to offer, just to overlook it. So digging deep into the holds of advertising to find scraps and clues for a better future seemed worth.

How has it without our realization crept underneath our subconscious and started to come out in form of crazy buildings springing up all over the world? The deep insight might after all provide a key to another revolution leading to a proud architectural era instead of a self guilty one.

The basic requirement to create something new and out of the box has led to the emergence of a new language of architecture which complies with no norms and limitations with the aid of new materials and computers. In the recent past of about a decade the growing number of iconic buildings with free forms all over the world has turned it into a revolution whose basis needs to be critically judged before complying with it. This era of iconic building is way too packaged and advertized, which neatly hides its pitfalls. Therefore it's important to look deeply for the dangers it carries along. Ironic as it may sound, but with such high promises for the future it becomes crucial to judge it from the point of sustainability and resource efficiency.

Why is this dissertation worth doing?

Researching the factors that have led to the wide springing variety of attention seeking architecture purely based on consumerism ideology and the impact that it is producing in the urban character where it sits will put us in a better position to react appropriately to its existence. Also the analysis formed by the knowledge of past experiences will act as an indication to the threads of the future so that we can be better equipped.

- a. To understand the factors which have boost the current revolution of buildings with exceptional forms and to trace its evolution.
- b. To study performance of these buildings underlying their glamorous presentations and their potential to respond to the current scenario.
- c. To study the contribution made by them to the present urban character of our cities and on the contemporary architectural practice, by having a holistic view of their effect.

1.4 Scope

The scope of the dissertation shall be as follows:

- a. Though there have been examples of iconic and free form architecture throughout the history, but this dissertation will be limited to study of iconic architecture that too primarily which is abstract in its form of the past recent decade.
- b. The research will be done from the point of view of aptness as buildings and resource efficiency of buildings which forms the new genre of free form iconic architecture.
- c. The focus of the dissertation shall be restricted to study the greater influence these buildings with exceptional forms are casting on the present era of architecture.

The following limitations are expected:

- a. Since this form of architecture is still rarely happening in India thus the main study would include buildings located outside India and thus would also be based on secondary sources.
- b. As these projects are usually carried out for their iconic value thus not much research data is available on their sustainability which can benefit the dissertation directly.

1.6 Research Methodology

The dissertation has been planned in a step wise manner to achieve its goal, which is 'To draw conclusions about appropriateness and sustainability of the new genre of Iconic architecture crying loud for attention and its relevance in the present context'. Though throughout history there has always been architecture which was far ahead of its time, meant to be an identity of its creator, but the use of abstract form for the purpose is relatively new and thus the evolution of these abstract forms shall be first put together. Then subsequently elements aiding its existence would be studied.

The idea is to get maximum overview of what is taking place around the world which compose and contribute to this revolution of icon creation in countless numbers. Then through various examples and case studies its appropriateness would be measured at both macro and micro scale. And its present impact understood to be able to predict its capability to influence the future.

References:

1. Raaij, M 2006, ***Capitalism and Decadence***.

Retrieved December 16, 2009, from-
<file:///D:/work/coll/dissertatoin/web%20pages/Eikongraphia%20Capitalism%20and%20Decadence.htm>

2. Jencks, C 2005, ***The Iconic Building: the power of enigma*** , Frances Lincoln Ltd. , London

Retrieved December 12, 2009, from Google books-
<http://books.google.com/books?id=DVtR96mHU7sC&printsec=frontcover&dq=iconic+building+by+jencks&cd=1#v=onepage&q=&f=false>

Chapter 2:

LIBERATION OF FORM: CREATION OF AN ICON

2.1 It's Evolution

2.2 What makes them possible?

2.1 Evolution of architecture with exceptional form

“It takes a lot of courage to release the familiar and seemingly secure, to embrace the new. But there is no real security in what is no longer meaningful. There is more security in the adventurous and exciting, for in movement there is life, and in change there is power.” (Cohen, A 1995).

This courage laid the milestones of the journey which leads to this era where almost anything imagined can be constructed. Though the recent examples of buildings with exceptional forms are those completely based on computer aid but the advent of free forms in architecture can be traced back much earlier, even before the advent of CAD¹.

The first milestone would be Antonio Gaudi. His work in Barcelona in the late 1800's and early 1900's are well known examples to manage non-rectangular architectural forms.

When sketches of Einstein's tower were first exhibited by Erich Mendelsohn in the 20th century they were considered as dreamy fantasies. But Erich's real intension in those Sketches was to exploit the plasticity of the relatively new material of reinforced concrete².

“If we look carefully at the pictures of Wright's architecture, Aalto's drawings or Mendelsohn's sketches or, in other words, the works of the

great masters of organic architecture, we shall see their attempt to free a functional geometrical form from a figurative abstract idea so as to comprehend the rational." Paulo Mauro Giraud wrote.

It was Frank Lloyd Wright who took free form architecture to another level by eliminating the notion of room as a box and by introducing principles of fluidity and plasticity. From Le Corbusier Chapel at Ronchamp (1955) to Eero Saarinen's TWA terminal in New York it's worth noting that free plans and facades of these buildings allowed for elements of variable curvature to emerge in the modernistic projects³. But at this time, architects took cautious approach to curvilinear forms about which they were still not sure.

And with the onset of the new digital age, architecture saw the birth of architectural forms for which imagination was the limit. With Digital Age, High tech materials and breakthrough construction technology, these new forms left behind all norms and standards⁴. It discarded the burden of long experimented architectural knowledge and came forward to define new theories of aesthetics and many of the existing architectural elements of function form, volume and space.

Jorn Utzon's Sydney Opera House, (1957) is a building we all know about. With its series of large precast concrete shells it is now undoubtedly considered a masterpiece. This too was initially criticized for not relating to their specific purpose (acoustic halls suitable for opera).

Frank Lloyd Wright's Solomon R. Guggenheim Museum with its unusual typology for a museum became a cultural icon. It also faced a lot of criticism most of which was focused on the idea that it overshadows the artworks displayed within, and that it is particularly difficult to properly hang paintings in the shallow windowless exhibition niches that surround the central spiral⁵.

Then came the Guggenheim museum in Bilbao by architect Frank Gehry with its clearly recognizable twisted, curving lines and series of interconnection volumes. It became an instant hit, and what followed could be called a revolution. All over the world buildings with more and more sculptural forms, creating the biggest engineering challenges ever started to come up.

The following pages summarize the major milestones



Fig.1. **Casa Batlló** by Antonio Gaudí (1904)

Source: <http://photography.nationalgeographic.com/staticfiles/NGS/Shared/StaticFiles/Photography/Images/POD/c/casa-batllo-524810-sw.jpg>

Unusual with its irregular oval windows and flowing sculpted stone work. Made before the CAD era with use of physical models.



Fig.2. **Einstein Tower** by Eric Mendelssohn (1920)

Source: <http://www.jahsonic.com/EinsteinTower.jpg>

Exploiting the plasticity of relatively new concrete, but due to construction difficulties, much of the building was actually realized in brick, covered with stucco.



Fig.3. **Chapel at Ronchamp** by Le Corbusier (1955)

Source: <http://www.clos-fleuri.net/images/chapelle.jpg>

Huge curving concrete roof. It became an icon against which every building erected was judged. It was considered a building hard one to equal.



Fig.4. **Solomon R. Guggenheim Museum** by FLW (1959)

Source: http://www.arcSPACE.com/exhibitions/wright/flw_1.jpg

A museum spiral in shape with a huge sky lit atrium in the centre. Criticized for the inconvenience in properly hanging paintings in the round shallow windowless niches.



Fig.5. **TWA terminal** by Eero Saarinen (1962)

Source: http://farm1.static.flickr.com/126/318200550_f7d150e80f.jpg

The pragmatic new encircling terminal made using concrete shell considered "hyper-efficient" and a "monument to human throughput"



Fig.6. **Sydney Opera House** by Jorn Utzon (1973)

Source: http://www.wayfaring.info/wp-content/uploads/2007/03/800px-sydney_opera_house_sailsk.jpg

Series of large precast concrete shells. Initially criticized for not relating to their specific purpose. Became a symbol for not only a city, but a whole country and continent.



Fig.7. **Guggenheim Museum** by Frank O Gehry (1997)

Source: <http://static.howstuffworks.com/gif/guggenheim-museum-bilbao-landmark-1.jpg>

Described as "The Building of the Century". Consists of various types of curved and orthogonal volumes finished with different materials creating a sculpture in itself.



Fig.8. **Mercedes-Benz Museum** by UN studio (1998)

Source: http://aedesign.files.wordpress.com/2009/09/mercedes_pic.jpg

It is based on a unique cloverleaf concept using three overlapping circles with the center removed to form a triangular atrium.



Fig.9. **Burj Al Arab** by Atkins (2000)

Source: <http://www.kellogg.northwestern.edu/student/club/meaba/Spec.%20Burj%20Al%20Arab%20web%20lay-out.jpg>

Vision as the world's most luxurious hotel. Thus creating one of the tallest structures on an artificial island to look like a sailing boat rising from the sea.



Fig.10. **Swiss Re, London** by Norman Foster (2004)

Source: http://image.guardian.co.uk/sysimages/Arts/Arts_/site_furniture/2007/06/01/gherkinsilli460.jpg

Shaped like a rocket with a narrower bottom has become the icon for the city of London.



Fig.11. **Beijing National stadium** by Herzog & De Meuron(2008)

Source: <http://www.globewomen.org/summit/2010/Pics/Birds%20Nest%20Better.jpg>

Shaped like a birds nest, meant to become an icon with which world would recognize china.



Fig.12. **Royal Ontario Museum** by Daniel Libeskind (2010)

Source: <http://images.google.co.in/imgres?imgurl=http://photos>

Crystalline form with sharp edges standing out loud in its heritage surrounding. Building shape not apt for the display of art inside.



Fig.13. **Dubai Opera House** by Zaha hadid (2010)

Source: <http://www.chaosanddestruction.biz/blog/wp-content/uploads/operahouse.jpg>

Fluid in shape to reach the sole goal of becoming a cultural icon for Dubai.



Fig.14. **Dubai towers** by TVS design (2014)

Source: <http://www.eikongraphia.com/wordpress/wp-content/DubaiTowersTheLagoonNightCopyrightTVSA2Small.jpg>

Choreographed to reproduce movement of a candle flame. Concept depicting neither the function nor the context. The towers twist, wave and taper. All at the same time.

The last decade has seen the emergence of architecture which is dictated by nothing but pure imagination. Today designs with digital aid and backed up with break through materials and construction technology, for the first time in history have left behind all the constraints and taken the lead role. All through history forms were an outcome of function, material potential and limits and construction limitations but now form has no limit. Everything else is asked to cope up. Construction earlier was based on practical experience. Gradually, more and more has come to be grounded on science: strength of materials, development of new and improved building materials, structural analysis and design, heat and moisture transfer, acoustics, natural and artificial illumination, energy conservation, fight against corrosion, fire, smoke, wind, floods, environmental protection, information and telecommunication technology, mathematical methods and application of computers, management and social sciences.

Digital Aid:

In the year of 2000, the end of the 20th century and the beginning of the 21st century, the applications of computer had already changed the design method, especially the technology like the virtual reality,

CAD/CAM technology and Internet. The digital technology has been another breakthrough as a tool, much more powerful than the drafting invented in the Greek time or the modeling in the Renaissance and has architecture much more deeply. Spatial modeling was responsible to fulfill and accomplish finally the architects artistic needs and architectural intentions. It gave the architect the priceless ability to manage free forms and shapes, hence, giving the architect new possibilities to create more challenging but still generatively and parametrically controlled design. The ability to model free, flexible, curved and sometimes fluid like shapes strengthened the ability to create imaginative illustrations. Through the computer, many famous architects, for instance Frank Gehry and Peter Eisenman, had designed various amazing spaces.

The use of computers in architecture really forms an age, which has influenced not only on architecture, but also the value system (Why it is good) and new aesthetics (what is beauty). Its influence can be defined as a revolution. And like every revolution changes human history and life style: fishing and hunting revolution, agricultural revolution and industrial revolution it too has lead to the emergence to the new era of form oriented architecture.

Breakthrough Materials:

The central science of mechanics of building materials itself has undergone quite a progress. The collective knowledge about elastic and plastic state, stress and strain, micro-cracking and fracturing, stability, buckling, ductility, probability influences, risk, ultimate states and others has resulted in the complex science of present-day mechanics of materials. Parallel to the progress in materials sciences, the technology of construction and manufacturing of building materials have also evolved tremendously.

Building materials and their potential performance have right from the very outset formed the starting basis for shaping buildings. Thus, the available technologies in stone, timber and bricks in earlier historical periods; in iron/steel and concrete since the nineteenth century and, very recently, in glass and plastics, have all influenced the appearance of buildings.

Steel:

Iron has long been utilized in building but steel was introduced only in the course of the second half of the nineteenth century. Its introduction resulted in the construction of tall structures (skyscrapers and towers) and

long-span structures in the form of bridges and spaces covered by domes, shells and space trusses.

New fabrication methods, new alloys, new structural schemes and new fastenings were invented, all of which exerted varying impact on architecture. The American architect Frank O. Gehry declared that for him 'metal is the material of our time' and that 'metal is sculptural allowing for free-form structures inconceivable in any other material'.

Glass and Structural Glass:

Glass performs a significant function in space divisions and heat and light control. It has been known since early times so it fully justifies being considered as a traditional material. Glass, however, was expensive and so enjoyed only restricted use up to the nineteenth century. Mass production of sheet glass, the development of steel frames, cable structures, fixing devices and systems as well as of elastic and elasto-plastic sealant changed this and resulted in a number of innovative solutions and systems. The ambition still remained to develop all-glass façades with uninterrupted glass surfaces. All-glass glazing systems evolved from earlier curtain wall systems in which the glass panes were

fixed between linear frame components: glass beads, gaskets or pressure profiles.

Some notable buildings displaying unusual glass realizations are:

- The Glass Pyramide at the Louvre, Paris, 1988, architect: I.M. Pei and Partners
- The Netherlands Architecture Institute, Rotterdam, The Netherlands, designer: Jo Coenen, 1988–93 (Plate 19)
- Waterloo International Railway Station, London, 1994, architect: Nicolas Grimshaw and Partners
- Western Morning News, Plymouth, England, 1992, architect: Nicolas Grimshaw and Partners

Concrete and Reinforced Concrete:

Research and innovation resulted in various new or improved types and properties of heavy and lightweight concrete, new production technologies such as prestressing, and new structural analysis and design methods for various loads and actions, prestressing, etc. Relatively recent is the intelligent and high-performance concrete. The use of glass, polypropylene and steel fibres (including textiles and fabrics made from such fibres) in concrete more generally, in cementitious materials) has

come a long way over recent years. In recent years a type of concrete developed known as the high-performance concrete. High-performance concrete has a compressive strength exceeding 60 N/mm² and, with a special composition mix, over 100 N/mm²: ten times stronger than ordinary concrete. High-performance concrete is prepared with special cement, mineral and chemical admixtures (fly ash, super plasticizers, polymers, silica fume, granulated blast furnace slag, high-reactivity metakaolin) and is reinforced with fibres instead of steel rods.

Some of the realizations with high-performance concrete are high-rise buildings, such as:

- Lake Point Tower, Chicago, total height above ground 197 meters, 1966–67
- Water Tower Place, Chicago, 76-storey concrete building, 1976
- Texas Commerce Tower, Houston, 75-storey composite steel and concrete building, 1981
- South Wacker Drive, Chicago, 70-storey, 295 meters-high reinforced concrete building, 1989.

Plastics, Fabrics and Foils:

For structural and space-enclosing purposes, synthetic materials, mostly polymers and polymer composites, are also used to produce building components. Their properties are so different from those of traditional materials that design from them calls for specialized knowledge and care. Their fabrication processes usually favor curved surfaces, which in themselves result in new forms, unfamiliar in former construction.

Plastics and the composites manufactured from them have low modulus of elasticity. The required rigidity of a structure must therefore be derived from the shape rather than from the material. Shapes with high rigidity are three-dimensional surface structures such as domes, shells, or folded plates. To achieve or increase rigidity, fibre-reinforced sheets in appropriate forms are used, e.g. by troughing, ribbing or supporting the sheet in a sandwich structure. Plastics are now being applied in construction for many purposes: glazing, skylights, roofs, heat, sound and water insulation, enclosures and claddings, lighting, etc.

Some realized buildings that are covered by such materials are:

- Covered Tennis Court, Gorle, Italy, 1991
- Trade Fair Stand, Frankfurt, Germany, 1994
- Recreational Clinic, Maserberg, Germany, 1993–94

Technology:

Development and handling of highly complex structural systems and progression in the engineering of constructing buildings are also responsible for the current era of free-form buildings.

Wide span structures, membrane, tensioned structures, space structures, air supported structures, air inflated structures and various other forms came to the aid of form realization. The new methods in mathematics and computing have been increasingly applied in structural analysis and also in studying other engineering problems: in building physics, heat and moisture transfer, acoustical problems, fire and smoke propagation and control. Progress in mathematics was combined with enhanced potentials in computation, for example in structural dynamics, aerodynamics, fluid dynamics and the new analysis methods were applied in structural design, airflow control, design of heat and ventilation systems.

1. Pettila, A 2006, *Describing the changes in architectural information technology to understand design complexity and **free form architectural expression***, HUT, Department of architecture, Finland.
2. Kolarevic, B 2003, ***From Baroque to Gehry***, Architecture in the digital age, Spon press.
3. Szalapaj, P 2005, '**Contemporary Architecture and digital design**', Architectural press.
4. Liu, Y 2006, ***The Philosophy of Digital Architecture: FEIDAD Award***,
Retrieved January 25, 2010, from-
<http://architettura.supereva.com/extended/20060513/index.htm>
5. *Art: Last Monument* 1985.
Retrieved December 16, 2009, from-
<http://www.time.com/time/magazine/article/0,9171,892851-1,00.html>
6. Sebestyen, G 2004, '**New architecture and technology**', Architectural press.

Chapter 3:

**PUT MY CITY ON THE MAP:
CITY BRANDING THROUGH ICONS**

3.1 The Bilbao effect

3.2 City Branding: the source of architectural form

In a March 31, an article, in the Washington Post posed the following question:

"Can a single building bring a whole city back to life? More precisely, can a single modern building designed for an abandoned shipyard by a laid-back California architect breath new economic and cultural life into a decaying industrial city in the Spanish rust belt?" (The vision of a Guggenheim museum in Bilbao, Harvard design school, 2004)¹

BILBAO :

Bilbao is an urban region of approximately 41-square-kilometers located on the Atlantic coast of Northern Spain. It is the principal city of Spain's Basque minority with a population of 400,000 but encompassing a metropolitan area of about 1 million people. According to the London Financial Times², it is one of Spain's major ports and has been the entry point for heavy manufacturing into Spain for 100 years. It suffered a major blow in the late 1980s when its big downtown shipyard closed because of low-wage competition from Eastern Europe and Asia. And its economy was severely depressed in the eighties by the decline of the steel industry and the emerging competition in heavy manufacturing from 'tiger economies' of Southeast Asia¹.

The idea of the museum:

The Guggenheim Museum Bilbao was a key component of the Revitalization Plan for Metropolitan Bilbao, a huge renewal strategy in the heart of a region whose economic support had become outdated. The Revitalization Plan for Metropolitan Bilbao aimed to transform the city into a service metropolis within a modern industrial region in the European arena. Precisely because of its scale and ambitions though, the revitalization plan was met with local excitement, but critical skepticism too as the costs involved were high by any measure.

The new museum alone required an investment of over 10,000 million pesetas (\$95.24 million USD)¹.

Thomas Krens, Director of the Guggenheim Foundation is quoted as saying:

"It was commerce, pure and simple, that brought together the Guggenheim and Bilbao. This is not a cultural project; it's an economic development project".²

The museum was intended to transform this deteriorated port, gravely afflicted by accumulated debts, a 25% unemployment rate, industrial pollution and outmoded steel and iron trades, into a center of clean industries (service, financial and high tech) with important tourist and cultural offerings³.

The competition:

During spring 1992, three firms Arata Isozaki & Associates of Tokyo, Coop Himmelblau of Vienna, and Frank O. Gehry & Associates of Los Angeles were invited to submit proposals⁴. The goal of the selection committee formed to make the final decision was to choose a building with a strong iconic identity, a building that seemed greater than the sum of its parts. Frank O. Gehry and Associates was the winning firm.

The Design:

Gehry had proposed a sculptural design with a strong riverfront presence. FOG/A's design had virtually abolished right angles and flat walls. In the past, the firm's scale models had often dismayed construction companies. FOG/A's design housed the Museum in 'containers' and relegated aesthetic impact to the sculptural quality of the walls and roofing elements. Years later, Gehry recalled that "The Guggenheim Bilbao does not have a single straight line...It is not artistry, it is precision."⁵

The miracle:

Even before it was made people had started flocking to Bilbao for nearly two years, just to watch the building's skeleton take shape. "Have you been to Bilbao?" In architectural circles, that question acquired the status of a shibboleth.

Instant Fame:

Once the building opened with its billowing curves of shiny titanium and its powerfully massive sculptural presence, it was instantly perceived as a masterpiece. Tourists flocked to it. It became an icon of the city, to put them on the map and brought in tourist dollars, and created an instant, world-famous landmark. Artistic and glamour magazines started to portray its images and even high profile papers like the *Financial times* and *The Economist* devoted huge column inches to analyze it. Its images to started being produced everywhere through music video clips (e.g. Smashing pumpkins), advertisements (Audi's TT coupe model), corporate images on the internet (the Swedish institute of steel construction's webpage), and fashion (Paco Rabanne's silver *line* collection) and soon the museum became a brand⁷. It also started to show itself worldwide as music videos and movie's background⁶.

Pleasing Economics:

While the Guggenheim Museum Bilbao was a costly venture, its return on investment (not including the value of the permanent art collection) was complete as early as seven years after opening. The number of incoming travelers to the Basque country increased by more than **23,000 persons per month from October 1997**, (opening of Bilbao museum) onwards⁷.

The increase of foreign **travelers per month improved a significant 43%⁷**. The new Guggenheim Museum boosted the local economy, helping to create 3,800 jobs and new tourism revenue. Figures show that since the museum's opening, the city has received an average of 779,028 new yearly overnight stays and has created 907 new full-time jobs¹.

This is what became commonly known as the “Bilbao Effect.”

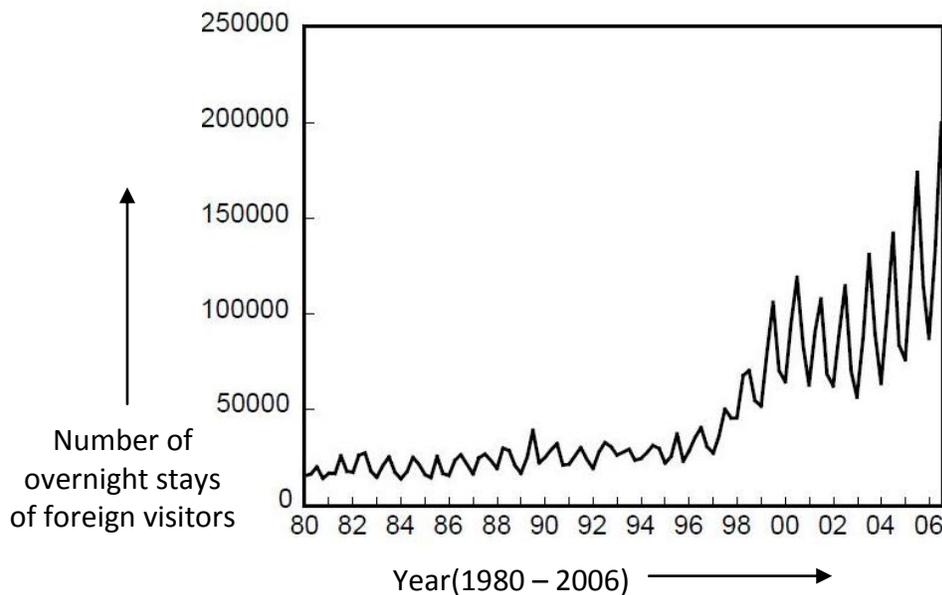


Fig.15. **Graph of overnight foreign visitors** in Bilbao museum

Source: http://www.etccorporate.org/resources/uploads/ETC_CityTourism&Culture_LR.pdf

Overnight stays of the foreign visitors in the province of Biscay (Quarterly data from January 1980 to September 2006)

Note:

The Guggenheim museum Bilbao opened its door in 1997. Bilbao is the capital city of Biscay.

3.2 City Branding: the source of architectural form

“We now live in a world dominated by global monoculture so pervasive and so powerful that it threatens the very identity of our cities.” By Van Syngel.

Since the Bilbao effect, virtually every client seems to want an icon, to put his or her city 'on the map'. Its success lead to the building up of immense trust on the use of the built form in transforming and determining the identity of cities, through strategic city-branding and signature architecture. Bilbao effect has started a chain reaction based on hopes of achieving instant fame and economic growth. The clichéd terms, 'different' and 'unique' have become bases of the strategy to achieve success, in which architecture and design have come to be the biggest players and architects have taken up the role of creator of identities.

Increased mobility and the free market have created a necessity for cities to brand themselves. Selling landmarks in order to gain a profit has thus become the latest trend in city branding. Every day new cities with its revitalization plans focused around specific iconic buildings are coming up. We inhabit in a globalized world where platforms for competition are global and the urge to achieve typically bigger and better results has become a race not only between the traditional bases of our design culture, but the rapidly developing nations of the world as a whole. Rich

corporations and government agencies acknowledge that the design and construction of identifiable architecture can be the necessary catalyst to kick-start the renaissance of a struggling area. In northern France, Lille successfully shed its drab architectural image to become a vibrant city, with its busy international rail terminus drawing a large number of visitors⁸.

This isn't an entirely new phenomenon though. History has proved that ancient city prospered with urban architectural monuments and important civic buildings. It was in-fact the basis on which many cities where designed. So, is this race a mere extension of what we have been always doing?

The problem in today's scenario is that today it has become a gamble with the exclusive jackpot as transformation of the cities fortune. It's been seen as a short-term solution to cities' financial problems. This has caused controversy and criticism of city planners because cities are sometimes seen as operating in a pro-active way – selling themselves out to corporate brands, in an attempt to make a profit. It is this phenomenon of the city branding which has become a guideline for city development. Converse to the actual principles of identity creation which is to be distinctive in its character cities are choosing globalized models which by itself defy the purpose. Therefore, in order for cities and nations to identify themselves in the global village they must compete for individuality,

offering a unique experience. Architects and developers must retain the diversity of a place without giving in too indulgently to global culture and allowing for freedom of choice⁸.

Technologies in design and construction have begun to transform our built environment into an evolutionary platform of ideas- many of which have, or are in the process of becoming a reality. Investments into infrastructure are becoming more vital to cities and project budgets are soaring to newer levels but all at the expense of huge public funds.

Branding of Delhi:

Delhi is now hosting the common wealth and promoting itself as a 'world class Global city' but unlike Beijing is not creating iconic buildings but rather public infrastructure in form of metro, flyovers, BRT corridors what not. A probable reason to this might be that Delhi is much more democratic than its counterpart Beijing. There is immense freedom of speech which leads to open criticism.

References:

1. Harvard Design School, ***The vision of a Guggenheim museum in Bilbao***, 2004

Retrieved February 12, 2010, from-
<http://www.gsd.harvard.edu/people/faculty/pollalis/cases/BilbaoG-CaseA.pdf>

2. Haacke, H 2002 , ***The Guggenheim Museum: A Business Plan***

Retrieved February 12, 2010, from-
http://www.springerlin.at/dyn/heft_text.php?textid=1568&lang=en

3. Mcneill, D 2000, ***McGuggenisation? National identity and globalisation in the Basque country***, Pergamon Publishing, UK

Retrieved February 16, 2010, from-
<http://www.scholars-on-bilbao.info/fichas/6GomezGonzIJURR2001.pdf>

4. Brooksbank, A 2004, ***Challenging the seductions of the Bilbao Guggenheim***, International journal of Iberian studies

Retrieved February 16, 2010, from-
<http://www.scholars-on-bilbao.info/fichas/BrooksbankIJS2005.pdf>

5. Harvard Design School n.d., ***Managing the construction of the Museum Guggenheim Bilbao.***

Retrieved February 12, 2010, from-
http://www.arch.ethz.ch/pmeyer/Infos/Pollalis/case_Guggenheim.pdf

6. Wikipedia, ***Guggenheim museum Bilbao***, Media impact.

Retrieved February 12, 2010, from-
http://en.wikipedia.org/wiki/Guggenheim_Museum_Bilbao

7. Plaza, B 2002, ***The Guggenheim –Bilbao museum effect.***

Retrieved February 12, 2010, from-
http://www.arch.ethz.ch/pmeyer/Infos/Pollalis/case_Guggenheim.pdf

8. Pitney, A n.d., ***Indeterminate Identity.***

Retrieved November 26, 2009, from-
http://www.shef.ac.uk/architecture/main/gallery/gal/diploma/theoryforum07/essays/alex_pitney.pdf

Chapter 4:
THE ICON AND ITS TRAILS

- 4.1** Post Bilbao: Icon Icon everywhere
- 4.2** Museum cities

4.1 Post Bilbao: Icon Icon everywhere

In an interview with Charles Jencks, Frank Gehry said:

“After Bilbao (Guggenheim Museum, Bilbao) happened I get called to do ‘Frank Gehry buildings’. They actually say that to me. We want a ‘Frank Gehry’. I run into trouble when I put a design on table and they say ‘well it isn’t a Gehry building’. It doesn’t have enough of whatever these buildings are supposed to have-yet.”¹

Guggenheim museum went on to become a masterpiece yielding fame and money to its creator and owner. Well, that’s sounds great.

But the real problem starts with the question-

“Can’t the success of Bilbao be repeated?”

And who else but architect comes to the rescue.

Suddenly architecture was in. Everybody, it seemed, wanted to be like Bilbao, wanted its own daring, avant-garde iconic building. Usually that building was an art museum or a skyscraper. Every few months, someone announced plans for the new tallest building in the world.

Buildings took on crazy forms, largely because the computer made it possible for structural engineers to figure out how to make almost any shape stand up. Students at schools of architecture, influenced by the work of Gehry and others, played with their new computer programs to

invent amazing shapes. Every work of architecture, it seemed, sought to be an original icon. A few leading international architects became, for the first time ever, media celebrities.

But how many intended icons actually make the grade of international recognition? The reality is that for every Bilbao there are scores of buildings that feature in Sunday papers and in-flight magazines for a year or so and then quietly disappear from sight².

Well, Frank Gehry could replicate this style elsewhere, as presumably will happen with the forthcoming Guggenheim Museum in Manhattan (Cash and Ebony 1999), perhaps causing Bilbao to lose its present advantage. Still, a masterpiece cannot be easily reproducible, not even by the author himself. Creativity is a highly elusive reality, even for the artists.

Often for architects who achieve fame by a single iconic building, which opens up a sudden pool of projects for them, they keep on clinging to the earlier triumph of fame and fail to bring out refreshing ideas. In fact at times clients seem to fall back on the image of what has been successful before and fail to realize that originality can be the only key to stand out.

The Bilbao Decade produced some wonderful buildings, but it was led to the loss of social purpose of architecture.

For example in the emirate of Dubai, the sun is shining so brightly that the Palazzo Versace, a hotel due to open next year, plans to offer its guests a beach of artificially cooled sand. The Guardian, a British newspaper, reports that pipes filled with coolant will be installed beneath the beach to prevent it from stinging anyone's toes. "We will suck the heat out of the sand to keep it cool," says the hotel's president³. Huge fans, too, will maintain a gentle breeze on the beachgoers. These will be wind machines, but instead of generating energy, like windmills or wind farms, they'll be expending it. Not only that: The new Versace plans also to refrigerate the water in its enormous acre-and-a-half swimming pool⁴.

Why would anyone want to visit such an unnatural beach? Why not just stay in your air-conditioned hotel suite with a sun lamp? Well no clue.

Perhaps part of the attraction for a tourist is the sheer pleasure of knowing that you have the power to waste the earth's resources.



Fig.16. **Hotel Palazzo Versace**, Dubai
Artificial beach with refrigerated sand.
Source:
<http://images.google.co.in/imgres?imgurl>

Few examples among a whole lot of others of recent buildings, part of the race.



Fig.17. **New Art Gallery of Alberta**, by Randall



Fig.18. **Dubai Opera House**, By Zaha Hadid



Fig.19. **BMW Museum** , by architect Wolf Prix



Fig.20. **Cybertecture Egg Mumbai**, by James Law



Fig.21. **Towers in Malaysia**, by Studio Nicoletti



Fig.22. **Dubai Towers Dubai** By TVS Associates



Fig.23. **Oil company headquarters** ,SOM architects



Fig.24. **The Ren building** , BIG architects

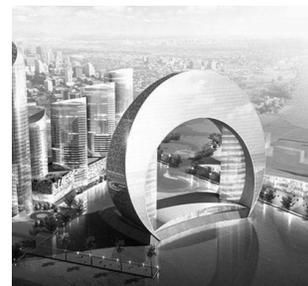


Fig.25. **Hotel crescent**, by Heerim Architects



Fig.26. **Kuwait towers** , by firm Atkins



Fig.27. **Capital Gate**, by architects RMJM



Fig.28. **Helix hotel** ,by firm Leeser Architecture

Few examples of the reflections in recent student projects and competitions.



Fig.29. **Botanic Garden** for Hybrid Plant (2006)

Source: <http://www.architectstudent.net/projects/project.aspx?id=9342>
By Sebastian Schmid of TV Vienna school, Vienna



Fig.30. **Euroscrapers** (2007)

Source: <http://www.evolos.com/category/2007/>
By Jose Munoz Miller, Mexico
3rd Place Evolo Skyscraper competition 2007

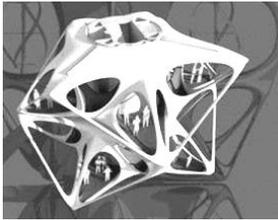


Fig.31. **Symbiotic interlock** (2008)

Source: <http://www.evolos.com/category/2008/>
By Daekwon Park, United States
Special mention Evolo Skyscraper competition 2008



Fig.32. **Algorithmic Housing** (2007)

Source: <http://www.evolos.com/category/architecture/page/3/>
By Marcin Pilsnaik, United States
3rd PLace Evolo Housing competition 2007



Fig.33. **Seascraper Floating city** (2009)

Source: <http://www.evolos.com/category/architecture/page/4/>
By William Erwin, Dan Fletcher, United States

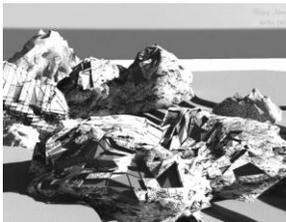


Fig.34. **Museum of natural history of salt range** (2008)

Source: http://www.worldarchitecture.org/world-buildings/building_photos.asp?img=/images/cmimg/186626.JPG&imgid=4440
By Fayaz Ahmed, Pakistan
Cultural building

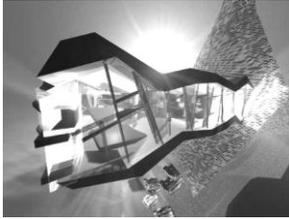


Fig.35. **Green Oasis** (2007)

Source: [http://www.worldarchitecture.org/world-buildings/award-surfer.asp?position=detail&otherimage=p2\(4\).jpg&country=Russia&no=5181&b_done m=5&photograph=Simon%20Rastorguev](http://www.worldarchitecture.org/world-buildings/award-surfer.asp?position=detail&otherimage=p2(4).jpg&country=Russia&no=5181&b_done m=5&photograph=Simon%20Rastorguev)

By Simon Rastorguev, Russia
Residential buildings

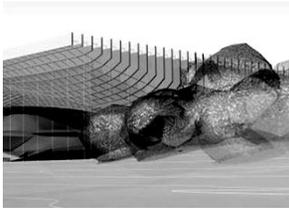


Fig.36. **Pre History museum** (2006)

Source: <http://www.worldarchitecture.org/world-buildings/world-buildingsdetail.asp?position=detail&country=Korea,%20South&no=2655>

By Hackenbroich , Korea
Cultural building



Fig.37. **Natural History Museum** (2007)

Source: <http://www.architectstudent.net/projects/project.aspx?id=9491>

By Mohammed salah, Egypt
Cultural building



Fig.38. **Emblem tower** (2009)

Source: [http://www.worldarchitecture.org/world-buildings/wacl-ratingmac.asp?position=detail&otherimage=Pearl%20within%20the%20Sail%20Zaabe el%20Park%20Dubai\(1\).jpg&country=United%20Arab%20Emirates&no=5323](http://www.worldarchitecture.org/world-buildings/wacl-ratingmac.asp?position=detail&otherimage=Pearl%20within%20the%20Sail%20Zaabe el%20Park%20Dubai(1).jpg&country=United%20Arab%20Emirates&no=5323)

By Filip Gabriel, United Arab Emirates
Official building

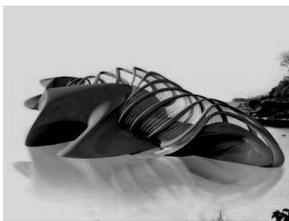


Fig.39. **Parametric Housing** (2007)

Source: <http://www.evolo.us/category/architecture/page/2/>

By Joseph Choma
Special Mention, Evolo Housing competition 2007



Fig.40. **Dallas Landscaper** (2009)

Source: <http://www.evolo.us/category/2009/>

By Brian Ahmes, Gregg Hicks, Chad Porter, United States
Special Mention Evolo Skyscraper competition 2009

Iconic Architecture is like the fashion industry, trying to come up with something new and flashy for this season to attract attention and sell itself. And cities are attracted to this if they have "inferiority complexes" that they are trying to overcome by keeping up with the latest fashions⁵.

But it is easy to throw away last season's dresses when they go out of fashion. It is not as easy to throw away last season's buildings. The permanence of the building must be treated with respect and not like fast changing fad.

This shortsightedness is turning cities into museums where architecture is the artifact. But architecture is supposed to be about making places for human habitation - rooms, streets, parks, cities - not merely skyline icons or beachfront palaces. In its mundane search for identity cities are witnessing construction of expensive, abstract buildings one after the other, exhibiting itself for even the slightest chance of fame. The void between architecture and art is almost vanishing and celebrity architects and major consultancy firms are no longer tied to their hometowns⁶.

The aspiring cities have made architects celebrities whose palette now extends to the entire global design scene. This has had a dramatic impact to the nature of the objects being delivered today that materials and

methods used to construct buildings have universalized. A huge pool of buildings has sprung all over the world missing the key of local connection and response to the context. Cities developing naively with only a global outlook are losing their contact with their origins and are diluting their locally enriched character.

Will the outcome of this be that all the cities soon start to look the same and share common features where once there were key distinctions?

What happens to the local connection and contextually sensitive relationship between people and their city's buildings? A well balanced urban plan with an in depth understanding of every project is the key to sustainable development that can address both the global need as well as local requirements.

The case of Dubai:

Is Dubai the city of the future, or the condensation of the worst developments of the past decennia; is it a fantasy, or is it all just fake; is it a dream or actually a nightmare, is it a utopia, or just an investment enterprise...?7

Doesn't really matter because Dubai works. We could joke about a 'Fata Morgana turned into a real Oasis', but it never was a mirage. In contrast

to utopia's that were never built and were never updated to actually work in reality, Dubai as a plan is being constantly redesigned to keep working. Just like Las Vegas whose growth was mainly due to the fact that it was located on a border, in a no-mans-land without any laws and taxes⁷. Things that couldn't anywhere else, could happen there. The absence of taxes and customs – that what defines a democracy, is also the basis of the success of Dubai. The development of Dubai seems to be one of those things that you either really like, or really dislike.

“The notion of an icon has become almost banal here. You have to build a non-icon now in order to be iconic,” said Peter Rees, London’s city planning officer⁸.

The city of Dubai might be the model for the future city, and that is worrying, because its features are all the wrong ones:

- Sameness, Fakeness, Gatedness, Malenes

It lacks the basic sense of community, and works with the principle of being a spectator rather than a participant. The total waterfront-development of Dubai measures twice the size of Manhattan. If you compare the public spaces of Manhattan and Dubai, one finds that there is none in the latter⁷. Public space seems like something of the past.

The biggest Irony is that Dubai with its largest room for creativity in the world has turned into an ideal of fakeness. This is because Dubai is not trying to be authentic; it is only about selling. “Anything goes, as long as it is successful.”

‘You can do there whatever you want’, the advertising video of palm island says. Ultimate freedom is for sale.⁷



Fig.41. **Palm Islands**, Dubai

Source: <http://www.eikongraphia.com/images/PlanMarch2007DubaiCopyrightNakheelS.jpg>



Fig.42. **Albida tower, Doha**
 Meant to be iconic building
 Source:http://farm3.static.flickr.com/2782/4118074377_4785a34886.jpg



Fig.43. **Doha Skyline with Albida tower**
 Lost Iconic value due to replication
 Source:http://wpcontent.answers.com/wikipedia/commons/thumb/e/ee/Doha_construction.jpg/300px-Doha_construction.jpg

The Albida tower, in Doha, is a perfect example of how because of branding a city loses links to itself. It was built with aim of becoming one of the most outstanding landmarks on the Doha skyline – reflecting its modernization and growth. But the tragedy is usual- this twisting tower is not alone and so many other towers are soaring up to their full heights alongside to achieve the same goals. Newer proposals are being realized almost every week. What used to be a set of traditional buildings on the coastline of Doha has now turned into an urban sprawl of super modern high- rise towers⁶. A great transformation indeed! Many cities have seen this happen over generations; here it's been condensed into just a couple of years.

1. Jencks, C 2005, ***The Iconic Building: the power of enigma*** , Frances Lincoln Ltd. , London.

Retrieved December 12, 2009, from - from Google books
2. Brand Avenue, ***Wanted: An Icon***

Retrieved December 12, 2009, from -
http://brandavenue.typepad.com/brand_avenue/2006/08/wanted_an_icon.html
3. Campbell, R 2009, ***Marking the end of ' The Bilbao Decade'*** , *The Boston Globe*, Boston

Retrieved December 12, 2009, from -
http://www.boston.com/ae/theater_arts/articles/2009/01/11/marking_the_end_of_the_bilbao_decade/?page=full
4. Climate Progress 2009, ***Adaptation- or Climate crime?***

Retrieved November 06, 2009, from -
<http://climateprogress.org/2008/12/20/versace-palazzo-refrigerated-beach/>
5. New York times 2006, ***Star-architecture in Miami***

Retrieved December 12, 2009, from –
http://preservenet.blogspot.com/2006_05_01_archive.html
6. Texeira,B GHD Global, ***City Branding.***

Retrieved January 04, 2010, from –
http://www.worldarchitecture.org/files/doc_datas/5989_.pdf
7. Raaij, M 2007, ***Dubai 1: White city***

Retrieved December 12, 2009, from – <http://www.eikongraphia.com/?p=1865>
8. Construction week online 2009, ***Dubai and the Mumbai egg.***

Retrieved December 12, 2009, from –
<http://www.constructionweekonline.com/article-6833-dubai/1/print>

Chapter 5:

AN ICON: BUT A BUILDING?

5.1 Performance as a building

5.2 Case Studies:

The Beijing National Stadium & Bilbao Guggenheim Museum.

Matt Weaver wrote in *The Guardian*:

'The truth about those iconic buildings: the roofs leak, they're dingy and too hot'¹

The growing production of buildings with an exceptional form has been met with a highly hostile reception in architectural criticism for a number of years. In fact the first critique of the phenomenon was recently published in book form: John Silber's *Architecture of the Absurd: How 'Genius' Disfigured a Practical Art*. Its cover features the Stata Center designed by Frank Gehry for MIT. A week after the book came out, the university took Gehry to court over structural defects. Silber's argument is the same as Weaver's: abstract form buildings are often impractical and poorly built. The only thing they do right is to stroke the ego of the architect².

Divergence of form and function:

Can they both be successfully integrated?

These buildings have led to the growing dichotomy between exterior and interior form, an interesting phenomenon far removed from the functionalist modernist decree that form must follow function. If we consider a building's interior and exterior as having divergent functions

then we can evaluate the merits and pitfalls of each element independently. While both have its own importance, the very recent architecture that we see which tries to achieve iconicity gets heavily biased towards form. This has given them the unwanted tag of being nonfunctional.

A well know example is the Guggenheim museum designed by Frank Lloyd Wright. Most of the criticism of the building has focused on the idea that it overshadows the artworks displayed within, and that it is particularly difficult to properly hang paintings in the shallow windowless exhibition niches that surround the central spiral. The walls of the niches are neither vertical nor flat (most are gently concave), meaning that canvasses must be mounted proud of the wall's surface³. This probably is the most basic function which cannot be compromised for anything. Same follows for The Denver Art Museum by Daniel Libeskind and many other museums which display the architecture more than the display the art.

The world famous Sydney Opera House by Jorn Utzon followed an outside in approach as a result of which the size and shape of the concert hall was dictated by the exterior shells. Therein lay the problem, relating the interior shape to the exterior system of shells as the two were totally unrelated⁴.

Response to the context:

Well suited to their aim these buildings stand out aloud in the surroundings they sit, giving little or no consideration to the context. In cases where they claim to do so the relation seems strained and artificial.

These buildings frequently occupy prominent places within a city and eventually become synonymous with a place, they become site specific, but at the same time adopt a broadened sense of locality, the icon can become associated with the city or country. But seldom do they give little importance to it in return.

Birmingham a shopping mall aimed to be an icon for the city is a blob like structure covered with aluminum disc all over it. As a contribution to the city-scape it is scale-less uninviting and completely out of sympathy with its surroundings. The building is situated just by St Martin's church in Bullring shopping area, which creates this kind of awkward relationship between the historic sight of faith and more current but also glorious temple to consumption.



Fig.44. **Birmingham shopping mall**
Source:http://www.artrabbit.com/images/dataobjects/images/55dcd4ba50ab880d304659a67dfc3c7c_0.jpg

Excessive high costs:

As commonly perceived most these buildings do usually exceed their project costs .This is something that I concluded after coming across many articles stating how projects had to be stopped or revised for their costs went way too high. It can also be explained by the theory that more conventional architecture (following orthogonal planes) has developed after many years of trial which has lead to the most cost efficient ones to survive.

The top winner entry for the controversial new Scottish parliament building was later greatly criticized of a catalogue of problems that dogged its construction and forced it to go 10 times over budget¹.

Overcomplicated construction: engineering marvel

Though in general buildings with such sculptural form are difficult to achieve because of the use less know construction techniques, unavailability of skilled labor and high dependence on computers for handling production of structural elements. But in extreme cases in a rush to be different they often defy the basis of structures on which we built buildings thus creating tough construction situations in the name of engineering challenge.

Burj Al Arab by Atkins has a restaurant that seemed to be suspended in the sky, this restaurant was to soar 200 m above the sea projecting nearly 27m out on both sides from the buildings narrow central core with no visible means of support. A restaurant almost the size of normal buildings was to stick out of the centre of gravity of the building structure. And after its competition was one of the main points of pride for the structural team as an engineering marvel. But what for?

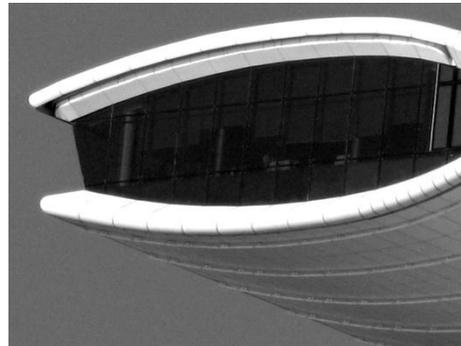


Fig.45. **Burj Al Arab**

Source:http://4.bp.blogspot.com/_nXhzLbs_Jl4/Szpc_OSP80I/AAAAAAAAA00/Jobv3vbcqgY/s400/burj_al_arab_digital.jpg

Fig.46. **Sky Restaurant**

Source:
http://lh5.ggpht.com/_12ydSPvpkDY/R348Jvtllsl/AAAAAAAAAZQ/J-OdEZoAcug/IMG_1375.JPG

Usually ignores the human scale to achieve monumentality:

As we have returned to the doors of monumentality, where tallest and the most exceptional of buildings are being constructed. Unlike earlier times when important public buildings rose above everybody else to declare its Supremacy, today this power has dissipated to many. Thus buildings non-responding to human scale are being made. The problem comes with the phenomena being widespread today, which makes the city unhealthy and non-habitable.



Fig.47. **The Denver Art Museum** by Daniel Libeskind

Source: http://graphics8.nytimes.com/images/2006/10/12/arts/12libe_CA0.600.jpg

The Denver Art Museum by Daniel Libeskind seems in race for the most impractical museum in history. The centerpiece of the Denver's new cultural district, the museum is composed as a series of interlocking rectangles evoking a pile of boxes tumbling across the site. Its bold, often mesmerizing forms reaffirm the originality of his talent, yet its tortured geometries make it a daunting place to install or view art — hardly a minor drawback⁵. And for all its emotional power, the building seems eerily out of date, and its flaws readily apparent. In a building of canted walls and asymmetrical rooms — tortured geometries generated purely by a form perception— it is virtually impossible to enjoy the art.



Fig.48. **Denver Museum Interior-1**

Source:
http://farm1.static.flickr.com/98/264307345_1c2187a7c3.jpg



Fig.49. **Denver Museum Interior-2**

Source:
http://farm2.static.flickr.com/1012/1344493642_22a7c0c90e.jpg

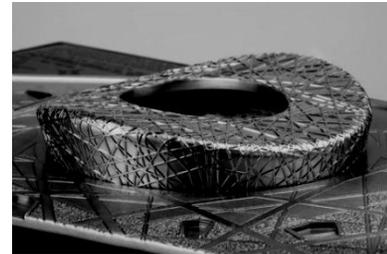
As Nicolai Ouroussoff quotes about the interior spaces “paintings by Degas and Pissarro look absolutely lost in the chaos of the surroundings. A row of Campbell’s soup can paintings by Warhol hangs on one side of a column, as if the curators had given up trying to find a suitable spot for them⁵. “One room features a selection of Betty Woodman ceramics: like leeches they cling, seemingly terrified that they might slide down to the floor below. Elsewhere, Marcel Duchamp is lost in a pointed corner. Whether this is a sly curatorial game or an unhappy consequence of the whims of the architect, it is difficult to tell.⁶” (Glaister, D 2006)

Oddly shaped forms are grafted onto the facades with no apparent rhyme or reason. A grid like facade of crisscrossing mullions looks cheap and overwrought. And the interiors are blandly conventional except for the random positioning of some windows, which do make for some strange views⁵.

The exterior of the building, the appearance for which all possible functionality was sacrificed also doesn't seem refreshing. The form of the building looks like "I have seen this a hundred times" contrary to its effort to stand out. Its titanium cladding, whether a respectful homage or a tired appropriation of the famous skin used for Frank Gehry's Guggenheim Museum in Bilbao, Spain, looks oddly familiar. And more generally, it reminds of Mr. Libeskind's geometries in earlier projects: the boxlike tumbling forms of an un-built addition for the Victoria and Albert Museum in London, the skewed cantilevered shapes of the Contemporary Jewish Museum in San Francisco⁶. It's sad that all his projects after the Berlin museum seems as though he is struggling to expand on that earlier language, as if his stardom has not allowed him the time or space to explore new strains in his work.

5.2 Beijing National stadium, Bird's nest

Project Type	: Stadium
Location	: Beijing, China
Architect	: Herzog & De Meuron Architects China Architectural Design & Research Group Ai Weiwei (Artistic consultant)
Structural	: Arup sport
Style	: Modern and contemporary
Broke Ground	: 24 th Dec 2003
Opened	: 28 th June 2008
Budget	: \$423 million
Constr. Time	: 4 1/2 years
Capacity	: 91,000 for Olympics, reduced to 80,000 afterwards
Height	: 69.2m above level pitch level
Size	: 3 million cubic meters
Steel used	: 110,000 tons



“Beijing Olympic Stadium is a Design to Remember.” – The New York Times .

“I am very proud of the building I think it is a great work, the bird's nest is the gift to the world for the Beijing's Olympics.” Mayor of Beijing

“The building's dynamic form and vast scale create a new icon for China and the city of Beijing.” Arup support

“The bird's nest is a new inspiration icon for a modern, internationalize and a prosperous china.”

“Its elliptical latticework shell, which has earned it the nickname the Bird's Nest, has an intoxicating beauty that lingers in the imagination. “

The Idea –

In 2008 Beijing had to hold the Olympics games. It was a trial for China and a chance to show the world its new found ability and status. What was thus stated by the government was “the ultimate opportunity to built truly all inspiring engineering icons” which actually was China's desperation for identity. With this came the dream of the National stadium which was the heart of the whole project, a jewel in the Olympic crown. The design was meant to be recognized by everyone all around the world. The stadium was considered to be a monument through which china would be recognized.

The requirements –

The design was meant to be recognized by everyone all around the world. The stadium was considered to be a monument through which china would be recognized and thus the design had to have this iconic image. In more tangible terms though a massive structure to hold 91000 people and to host many important games and also the opening and closing ceremony was to be made. Other requirements included the ability for post-Olympics use, a retractable roof, and low maintenance costs.

The Concept –

The stadium was idealized as a bird's nest wrapped with threads forming the outer skin and it was from here that the stadium derived its name bird's nest . It was the effort to design a stadium that was "porous" while also being "a collective building, a public vessel" that lead to the concept of the nest .

The Design perception–

The stadium is the largest steel structure in the world with a total of 110,000 tons of super grade steel to its credit. A technological breakthrough ,the most complex sports stadium ever attempted and built. One of the toughest engineering challenges ever taken in modern China. The stadium consists of two independent structures, standing 50 feet apart: a red concrete seating bowl and the outer steel frame around it. 36 km of curvilinear inter woven steel structure appearing to be chaotic and random but in fact every beam and every column was precisely engineered. This outer skin gave the stadium the appearance of a nest .

The Problematic Construction –

Foundation :

The size of the stadium demanded extremely deep foundations with piles driven up to 37 meters below the ground which was far deeper than the average stadium requirement. An extravagant amount of cement was further grouted to increase the bearing capacity through the means of grouting tubes.

The unreasonable steel requirement :

The complex design and structure of the birds nest determined the fact that ordinary steel would never be able to meet the requirements. Massive quantities of premium grade steel were produced for the stadiums distinctive external skeleton. Total steel requires was around 110,000 tons that was enough steel to build three aircraft carriers. But with the unconventionally high demand of steel and the growing steel prices due to recent steel demand in China the project became almost nonviable.

Unreasonable cost :

The cost of construction went so high that in July 2004 all the construction was suspended to review the project plans . There were experts who proposed changing the stadium into square ones or to remove the exterior steel skin completely . One of the foremost requirements the retractable roof was eliminated from the design to be able to make the

project viable and to be able to maintain the initial look proposed by the architects. These delays due to the immature project plans amounted to loss of six precious months because of which the project crossed the deadlines by a huge margin.

The complex structural behavior :

the unique steel skeleton which made the design iconic called for a series of inter woven steel structures up to 3013 m long surrounding the inner concrete bowl . In total there was an extraordinary 36 km's of steel wrapping around the structure. The structure unlike conventional ones consisted of millions of steel beams exerting forces in different directions and this posed a real challenge for the engineers. And with Beijing lying in the hearts of world's major seismic activity zone which further rendered the behavior of these random twisted steel structures unknown. All done to be able to achieve the appearance of randomness. A more conventional and symmetrical beam structure was thus installed behind the random appearing skin. The support columns turned out to be far more massive than in conventional stadiums with column weighing more than 1000 tons.

The roof :

Stadiums roof alone weighed 11200 tons which was far more than the

conventional figures.

ETFE – ethylene tetra fluoro ethylene an advanced plastic was used for roof paneling. An impressive 40,000 m sq. of this material was required for the task which cost around 8 million US dollars.

The criticism –

- Some critics openly attacked the bird nest designs. Many academics, scholars and experts joined the critics calling the birds nest a great waste, a safety hazard , an architecture born from foreign colonialism and a play for foreign architects.
- On July 30, 2004, China called a halt to the construction, under the tag of avoiding unnecessary extravagance but what appeared in some Chinese media revealed another story. It turned out the original design had potential safety hazards.
- Four top architects, all academicians and professors in China's best architectural institutes, initiated a petition letter, co-signed by 10 academicians, to Chinese premier Wen Jiabao addressing the safety issue of the Birds Nest. The petition criticized the design's reckless pursuit for visual impact while undermining the stadium's safety standards.

- “(The Birds Nest) is expensive and clumsy, totally running counter to prevailing principles for large sports facility construction,” the petition said. “It means enormous waste and risk.”
- Tang Jianhua, the vice deputy chief engineer of Beijing Survey and Design Institute, explained that the Bird's Nest was too heavy to be safe. He said each of the 24 piers supporting the gigantic steel structure exerts an average pressure of 40,000 - 50,000 metric tons per square meter to the foundation. Beijing's ground has never been tried with such weight, he said. Also, the Bird's Nest sits on a ground rich in underground water with fluctuating depth. Given Beijing's inadequate float-resisting measures, Tang doubted the foundation could survive the pressure once leakage occurs.

Other issues :

- Such extensive use of steel never occurred in constructing large buildings like this, because of the weight.
- The Bird's Nest's steel skeleton consists mainly of slanting lines, which provide less support than vertical pillars .
- As the top of the stadium is also heavy steel with no supporting pillars—any crack may cause massive collapse.

- In addition, the steel plates were welded together with a total seam of 300,000 meters, 60,000 done on the construction site. The internal stress caused by the heat of welding will lead to deformation unless enough time is allowed for the metal to recover from the heat.
- As the steel structure of the Bird's Nest was not joined and reinforced from underground, plus Beijing's soft soil, vibration from resonance was a serious threat to its foundation.

6.1 Guggenheim Museum, Bilbao by Architect Frank Gehry

Project Type	: Museum
Location	: Bilbao, Basque Country, Spain
Architect	: Canadian-American architect Frank Gehry
Structural	: Skidmore, Owings & Merrill
Owner	: Foundation del Museum Guggenheim Bilbao
Broke Ground	: October 1993
Opened	: 1997
Budget	: \$100 million
Constr. Time	: 4 years
Height	: 53m above level pitch level
Size	: 32 500 m ²
Titanium used	: 25,221m ²
Limestone used	: 34,343m ³
Glass used	: 6,164m ²



Described by Time Magazine as "The Building of the Century"

Architect Philip Johnson called it "the greatest building of our time"

"the Guggenheim Museum Bilbao forever changed the way the world thinks about museums"

It is "a miracle," said The New York Times

" It's the best building of 20th century " HRH king Juan Carlos I

Critics, on the other hand, have described the museum as looking like a cauliflower or a large soufflé

The Idea –

The object was to have a building with a strong identity . The museum had to let the inhabitants take their city back they had to turn their backs on the industrial period and stop fleeing the city as previous generations had done . They needed to get back their civic pride and thus the museum had to be a monument . Frank Gehry already celebrated for his abstract forms was chosen for the task and for Bilbao, the building had to match the scale of his ambition , a monumental sculpture with a chaotic abstract look to it .

The requirements –

The design was meant to be recognized by everyone all around the world. The purpose to revive the dying economy of an old industrial town of Bilbao . The foremost requirement was that It had to be the most unusual project, juxtaposing the rectangular buildings of Bilbao.

The Concept and inspiration–

As very typical of Gehry he wanted to give the building a notion of movement . For he feels that impression of movement in a building makes them part of the greater movement in the city , the buildings are part of

life and they change there is something transitory about them . Another concept was to capture the movement inspired by the scales of fishes . According to Gehry fish and their movements have always been the part of his architectural vocabulary for he relates it to his childhood memories of playing with fishes that his grandmother bought.

The Design perception–

An abstract sculpture like building was thus perceived . The building was clearly recognizable for its twisted , curving lines and series of interconnection volumes. Some of which were limestone claded orthogonal solids while the others of a more organic volumetry are clad in metallic titanium skins . These volumes were linked with glass curtain walls to achieve remarkable transparency throughout .

The Material choice –

Gehry accidentally saw a sheet of titanium held against the strong Bilbao light and then and there felt it was the material that best suited his design appearance against stainless steel which fell dull in the strong light . Gehry especially

liked the titanium's reflective properties and its dramatic ability to take on the color of the current light. This titanium used gave the building its identity, a skin comprising 24000 m sq of metal plates. Usually buildings doesn't use titanium for is very costly but during the project suddenly like a miracle as Gehry calls it , the price fell below that of stainless steel rendering the use of titanium possible. Other materials used were Limestone and glass. Limestone was used to indentify the orthogonal volumes , titanium for curved ones and the gaps spanned by glass screens.

From models to reality-

The first models were of cardboard and wood, and the final models of high-density plastic. But with its unpredictable form the design had to be modeled using high tech software to understand and determine it completely . Catia a computer program used in aviation design transferred the cardboard models into virtual reality to help solve the constructional problems.

Foundation :

One interesting feature of the foundation design was necessitated by the proximity of the Nervión River to the museum site. Floods were a real

possibility, so “water anchors” of different sizes were built to counteract buoyancy in the event of a flood. These cable anchors were created by driving piles into the bedrock, then boring out their centers. A cable was then fed through the hole and anchored into the bedrock, after which the bores were filled with concrete. As a last step, the cables were tightened from the top.

The structure :

The discrete geometric volumes of the Museum posed a huge engineering challenge . A system of metal girders served as the rounded skeleton , every girder is different each one made by the specification given by the computer program . Frank Gehry called these “integrated forms,” and named each one. The system comprised three layers of steel, each one serving a different function.

The primary structure – 3 meter square sections with a minimum of wide flange shoring , with all structural members being rectilinear in nature .

The secondary structure - This consisted of horizontal galvanized steel tubes (60mm diameter) at three -meter vertical intervals, established the horizontal curvature of the skin. This layer was connected to the primary structure with a universal joint, which allowed fine adjustment in all directions.

The tertiary structure - The tertiary structure established the vertical curvature. To achieve this all C-shaped studs were curved in one or more directions. The C shape allowed torsion to occur helping to maintain perpendicularity of the facing materials.

The sheeting - A 2mm galvanized steel cladding was bolted to the tertiary layer. On its interior side it was covered with thermal insulation and externally with an asphalt-based Bituthene membrane. Finally the titanium tiles were bolted to the steel using L- shaped stainless steel anchors.

The complex Glass geometry :

Another challenge faced was the extremely complicated geometry of the glass walls. Out of the total 2,200 glass panels, 2,000 of them were uniquely shaped, and most of the shapes were quite complex. The glass used was a special "California Glass" that does not color incoming light, but protects against ultraviolet light and radiation.

Criticism :

- The highest pass way is 26 m from the ground the highest point of the museum is 53 m and between the two there's nothing. That means there is 27 m high empty space that is inaccessible to the visitors. It would be possible to remove the whole of the upper part

of the museum without touching a single painting hung on the walls

.

- The 0.3-mm. titanium sheets used to clad the famed Guggenheim Museum in Bilbao, Spain, as it turns out, are acquiring brownish stains after just three years installed in the humid, industrialized port city.
- As a symbol of successful investment in architecture, it is limiting the role of architecture to mere icon.
- It gets attention, but as is the case with most attention seekers, when asked for attention in return, it gives little back. The building ignores the riverfront that gives it prominence, and worst of all, it ignores the very city to which it is meant to draw attention.
- Though it is near the center of the city, the Guggenheim shuns any relation to its context.
- The brutal design of the steps is demeaning to human beings. The endless blank and textureless surfaces are equally unfriendly. The lack of signage and amenity follow suit.

Guggenheim Museum, Bilbao by Architect Frank o Gehry



1

Like a good English muffin, the Guggenheim Bilbao sports a lot of nooks and crannies. This one creates a dark crevice completely outside the scope of the nearby security camera.

2

Difficult to find, the journey to the entrance is no small accomplishment. The main entrance way stairs are pitched so that people end up pushing off the same leg every time they step up.



3

We often see pictures of Gehry's signature sweeping curves, but seldom recognized are the unfortunate consequences: blank walls that are havens for negative activity

4

There are many dangerous nooks and the handicapped ramp is frightening.



5



The exterior of the museum provides nothing for visitors to relate to on a human scale.

1. Weaver, M 2006, ***The Truth about those Iconic building*** , The Guardian, 14 October

Retrieved December 28, 2009, from -
<http://www.guardian.co.uk/uk/2006/oct/14/communities.arts>
2. Raaij, M 2008, ***This building is a bird's nest.***

Retrieved December 12, 2009, from - <http://www.eikongraphia.com/?p=2419>
3. ***Art: Last Monument*** 1985.

Retrieved December 16, 2009, from-
<http://www.time.com/time/magazine/article/0,9171,892851-1,00.html>
4. Andrew, J 2008, ***Divergence of form and function,***

Essay School of Architecture, University of Lincoln
5. Ouroussoff, N 2006, ***A razor sharp profile cuts into a mile-high cityscape,*** The New York Times, October 12

Retrieved January 04, 2010, from –
<http://www.nytimes.com/2006/10/12/arts/design/12libe.html?pagewanted=all>
6. Glaister, D 2006, ***Better in than out,*** The guardian 16 October.

Retrieved December 12, 2009, from –
<http://www.guardian.co.uk/artanddesign/2006/oct/16/art>

Chapter 6:
CONCLUSION AND SUGGESTIONS

The nice thing with advertisements is that (a) you know it is an exaggeration, and (b) next year it will be different. Everything becomes relative. Like a play in the theatre. Just be free, and play along. In a world with only plausible truths left, as critic Michael Speaks repeats, bullshit can become a reality when it agreed to as something we can work with.

“In the last 10 years a new type of architecture has emerged. Driven by social forces, the demand for instant fame and economic growth, the expressive landmark has challenged the previous tradition of the architectural monument.” – by Charles Jencks.

To achieve this architects design buildings with a complex geometry. The abstract forms evoke reactions good or bad among the public, and these associations are steered by the architects. But in the process the functionality and efficiency of the building often take a back seat. Engineering marvels as many are called uses the most advanced technologies and materials to achieve not engineering challenges but rather imaginations of the architects which they pursue with their great ego.

In search of an Identity:

These buildings ‘seeks to provoke that strange combination of admiration and disgust, delight and paranoia’ Charles Jenck claims. As an Example The Swiss Re Tower by Foster + Partners. Is it a gherkin, a dildo, a cigar . . . ? The building defies unequivocal reading. This resistance to a

Straightforward classification of the building's form creates 'suspense' for the public, which means that the building remains interesting over time.

No matter what example we take the purpose binds them together. They all try to reach monumentality through their forms. The idea of monumentality started from the success story of Guggenheim museum Bilbao. But resistance to time and change is the core requirement for that and none of these buildings have either. They come with a tag of being different and how can anything remain different for long when it's done all over the world. Thus the whole aspiration of reaching monumentality remains hollow.

The Driving force-Capitalist consumerism:

Today everything's on sale the buildings and spaces and lifestyles and in some cases the architects they represent. Under the new conditions of capitalized globalization the nature of scale of the fame of these buildings and what they symbolize have been transformed by corporate interests in a historically unprecedented way. Under conditions of capitalist globalization, iconicity is the key component of the cultural ideology of consumerism, the underlying value system of capitalized globalization. Thus it's an incitement to spend money. It is in these terms that we can

explain the phenomena of deliberately manufactured abstract buildings in the global era, where those who own and control architectural projects advertise the uniqueness of their projects to promote them for profits.

The huge sacrifice :

In this consumer targeting scenario, till the money invested gives high profits there's little space for sustainability and energy efficiency. This aspect therefore is usually not talked about leave apart measuring them accurately on these lines. Some of them go on to become huge success. Then starts the real problem.

After the success of Bilbao museum , the big question which arose was if the success of Bilbao museum be repeated ?

Since the Bilbao effect, virtually every client seemed to want an sculpture, to put his or her city 'on the map'. The story of Bilbao museum alone has lead to shear madness born out of crude selfishness. Search of identity and the wish to be able to create something different became the main concern. The basic issues for functionality and aims to reducing the energy consumption of buildings was nowhere in the picture. And this happened not only for corporate but for governments too.

Its unfortunate enough that the ever exhausting discussions on sustainability, has reduced to nothing but a fancy concept to present buildings. Just like the UNFCC or the Kyoto protocol might have grabbed huge slices of Media packets, but the politics has bought it down to become the dismay of citizen world over. Sustainability, green architecture, green building rating systems have all together molded to become fancy packaging to wrap buildings.

In the recent times, through the aid of computers, we have witnessed abstract volumes, free flowing curvilinear dialogs as buildings whose sustainability credentials are often in question. A developer can get away with it, as for him these are simply a matter of *publicity, fashion and self promotion* aiding him to his goal for higher profits. Interestingly, under the safeguard of terms like “**economic revival**”, “**national identity**” and “**global stand**” the government has stolen the role of a developer. Inflated versions of the same story, with only the characters changing name from financial profit to funds for public welfare.

A whole new concept of “**Branding a city**” has surfaced with whimsically high amount of senseless spending on the most inefficient of buildings to produce images that can sell. These structures have been widely

publicized and claimed to be the future of architecture, a revolution one of its kind. A formula that draws on a blend of cultural institutions, convention centers, sports venues and brand-name architecture in an often desperate attempt to resurrect dying urban centers. This can turn living cities into Potemkin villages: sanitized shopping environments for the global consumer. Key to a successful sustainable city development lies in a well – balances urban plan with an in-depth understanding of every project that can address both the global need(the desire to express a city brand) and the local need (the fundamental need for a space to live and work).

The tragedy with projects like Guggenheim Museum, Bilbao or the Beijing National stadium and many others is that they trigger chain reactions, with architects and architectural students finding their inspiration in them. Parallels and copies are being perceived and proposed all over the world, in live projects, competitions and student projects.

Restrictions of any kind doesn't come to rescue as **what we feel is right is a response of the current time and is subjected to change**. Also it would be unfair to deny future generations the right to make something worthy.

But our response to what's happening in the present is critical for it will put us in better position to make appropriate choices for the future. The filter of public opinion is necessary because what such buildings does is that it creates its own layer amidst the many already existing ones, which we might hate or love later but it would be there for us to experience.

Though selfishness and monetary profits are the realities guiding all our actions, but the aspiration of a community based on true instinctive creativity, lives on as it's the only thing capable of standing out.

Because it's not hard to imagine what may become of us if each city of the world has its own Bird's nest or Guggenheim Museum.

Bibliography

1. **'Architecture and Identity'**, Herrle P, 2008.
2. **'The Iconic building'**, Jencks C, 2009.
3. **'Blobitecture'**, Waters J, 2007
4. **'Divergence of Form and Function: the Icon and the Auditoria'**, Essay, November 2008, Jonathan Andrew Appleby
5. **'The Beijing National stadium special issue'**, The arup Journal, 2009
6. **'Iconic Architecture Redefined'** article, Iffrig A, 2006
7. **'The truth about these buildings'**, article in the Guardian, Weaver M, October 2006
8. **'This building is a bird's nest'** article Raaji M, 2009
9. **'A Razor shape profile cuts into a mile high cityscape' article**, Nicolai Ouroussoff, 2006
10. **'Free form architecture'** published paper, Pentilla H, 2006
11. **'Indeterminate Identity'** Published paper, Pitney A, 2005
12. **'The branding of cities'** Master thesis, Ptefferkorn J, August 2005
13. **'Jean Nouvel's Guggenheim Rio: a Global and Ideological Analysis'** Article, Gelbard S, April 2005.
14. **'Work in progress'** article, Munt A, December 2005
15. **www.patrikschumacher.com**
16. **www.acadia.org**
17. **www.eikongraphia.com**

Bibliography

18. '**Architecture on Trial**' , Mladjenovic I, May 2004
19. '**Sustainable Landmark for Swiss Re in London**' , Skanska AB, 2003
20. '**the Guggenheim Bilbao museum effect**' International Journal of Urban and Regional Research, MARI´A V. GO´MEZ AND SARA GONZA´ LEZ, Volume 25.4 December 2001
21. '**Steel Flower**' modern steel construction, Hal Iyengar, Lawrence Novak, Robert Sinn, and John Zils, July 1998
22. '**The Bilbao effect**' Munich Personal RePEc Archive, Plaza, Beatriz, July 2007.