Realization of Forms in Contemporary Architecture

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By

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I dedicate this book to my Amma (Rtd. Prof. Dr. Antima Tiwari)
and Dada (Late. Prof. Dr. Purushottam Das Tiwari).

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INTRODUCTION

This book will attempt to comprehend how unique contemporary forms evolve and manifest. Contemporary architecture is broadly defined as the architecture of the present day. Contemporary architecture is difficult to categorize in terms of style or time period, but it is not difficult to identify. Contemporary architecture goes beyond the strict form and function of building materials. It includes the architectural styles that are currently being designed and implemented. This design incorporates materials into their natural habitat. Interior and exterior spaces are designed to incorporate their surroundings and make the design a natural extension of nature. (Julian, 2017).

The Guggenheim Museum in Bilbao is an example of contemporary architectural design. Frank Gehry designed the museum, which demonstrates how contemporary design differs from the strict and rigid conformity of modern architectural styles. The CN Tower in Toronto, Quebec, Canada, and the Sydney Opera House in Sydney, Australia are two other examples of contemporary design. (Sinku, 2013).

The modern architecture movement has had an impact on contemporary design and contemporary architects. The use of clean lines and neat conformity to form and function gave birth to a more free-flowing form of contemporary architecture. Although contemporary and modern architecture are not the same and mean different things, the movement towards a more uniform perfect form and style has left its mark on much of the contemporary architecture design buildings and homes.

Contemporary buildings have many features which stand them apart; form, being one of these features, is the main topic of this book. In terms of design, form refers to the way elements and components of a composition are arranged and coordinated to create a cohesive whole. The function of forms in contemporary architecture will be covered in this book. It will also discuss the role of forms in contemporary architecture. The way people perceive a space and memorize it, making it an iconic building, solely depends on the visual appeal of the building, which comes mostly through the form or shape of the building and the materiality of the building's outer skin. This is the first impression or impact of the building

on the viewer. Form has both visual effects as well as phenomenological effects, which will be discussed in this book.

Techniques of form evolution like deconstructivism, additive forms, etc., are very commonly seen in buildings. Different architects have different methodologies when the form generation method is in question. For instance, Frank Gehry adopts a method of paper sculptures to take inspiration for his building forms, whereas Santiago Calatrava takes his inspiration from human and animal sculptures. In this way the methodologies differ and thus the forms that come out are different.

A case study about the form generation and construction phases of the Guggenheim Museum in Bilbao City, designed by Frank Gehry, will be considered in this book to know how the procedure he used came to fruition in the specific form of the building; the role of digital technologies that were used for the project; and the materials used and what impact they had on the form and the city.

With complex and unconventional forms comes complications, it becomes difficult to visualize 2D sketches in 3D spaces; this is when digital technology comes into the picture. This book aims to understand the extent and role of digital technology in form generation and construction processes. Every aspect of design is being helped by digital technology in the contemporary architectural field. The search for innovative geometry has been an interesting subject for contemporary architecture over the last few years. Architectural design has entered a new era in the 21st century, and CAD programmes have evolved alongside the concept of form finding (*Design Real*, n.d.). Because of the options available, it is now possible for an architect to work with a computer to find the best form for a particular situation. According to the analysis of contemporary architectural pieces, the architectural design procedure can be semi-automated (Kourkoutas, 2007). By introducing a set of rules to describe the constraints of the form, generative approaches are being transferred into the architectural design workflow (*Design Real*, n.d.). Digital design technologies have advanced rapidly in recent years, and the range and scope of cad-related applications in architectural practice have expanded beyond the old-fashioned perception of cad as merely a production tool. The case studies that will be investigated in this book will indicate how much contemporary architectural practices have moved on from this limited, though still important area of application.

The use of a computer to intelligently design architectural objects based on relationships and rules is known as parametric design (Moore, 2016). These are defined in parametric software and can be easily manipulated to generate multiple 3D iterations of the design. The use of digital technology and parametric designs is evident in buildings such as the Walt Disney Concert Hall by Frank O Gehry, the Guangzhou Opera House by Zaha Hadid, the Bird's Nest by Herzog De Meuron, and the Water Cube by PTW Architects.

Often the form and its structure are so complicated that the conventional building materials cannot fulfill the desired requirements, thus unconventional and new materials are incorporated in the design, thereby making it iconic not just through unusual form but through its materiality as well. An example of a contemporary building using unconventional materials to achieve a specific form is The Water cube building in Beijing, which will be discussed in this paper. To achieve the form of the building – the water foam and the water cube aquatic center – it uses pre-fabricated ETFE panels and the entire structure is made out of steel space frames, where the panels give the feeling of bubbles. This being an example can be seen as a prototype of how different materials can be explored further to enhance the form of a building. The aim of this book is to see how unique geometric forms evolve and are realized in contemporary architecture. This shall include literature about contemporary architecture, buildings and architects, evolution of forms in contemporary architecture along with the role of technology in achieving complex form and the significance of materials.

This book is written to understand forms as a feature in contemporary architecture, which defines and alters the way people perceive a space. For this purpose, contemporary architecture will be defined and studied in a broad way wherein its history and origin will be discussed, and its difference from the more commonly used term modern architecture will be studied. An introduction to renowned contemporary architects will be given with their philosophies and methodologies. In the same context, the influence of and on these architects and buildings will be studied in this book. After understanding what contemporary architecture is, its features which make few buildings iconic and memorable will be listed, under which emphasis will be given to form as one of the major features. The evolution of forms and their conceptualization and perception will be analyzed, and focus will be given to form generation methods used by famous architects with the help of a few examples. Complex geometric forms which are common in contemporary architecture would not be

possible without new technologies adapted in order to realize them. The role of digital technology will be studied on both the design process level and the construction stage as well. Complications that arose due to complex forms in famous iconic buildings will be detailed, and how digital technology was used in these projects to solve these issues will be discussed in one chapter. In the end, how forms are achieved by experimenting with the materials used in their construction will be discussed through some examples.

Contemporary architecture is a very broad term branching out to various styles, spread out in a wide range of time frame. For this book, however, a specific time frame has not been set to generalize the role of forms in buildings; thus the example case studies included in this paper do not belong to a specific time frame or region, but have been chosen for this paper on the basis of their forms and its perception only. Contemporary architecture will not be studied in detail but just in context of forms and iconic buildings that will be emphasized. This book is mainly divided into three segments, namely, form generation, role of digital technology, and materials. These three segments will be studied using examples; however, information about one building in context of all the three specified segments is not available for this book, which is why different examples of contemporary buildings will be taken to study different segments of the paper. Architecture depends upon many forms of technologies for the design process, structures and construction stages. The detailed study of construction methods will be beyond the scope of this book, just the role and implementation of digital technology will be covered with respect to few examples.

Chapterization Scheme

The aim of this book is to understand how unique and unconventional forms are realized. The study is distributed over six chapters, within which different subtopics are discussed. An overview of contemporary architecture has been given in the general introduction. Emphasis is given to the contemporary architects and their philosophies and methodologies. Form as a feature is discussed in the next chapter under which various emerging trends like deconstructivism, computer aided design, etc., are discussed. In the same chapter, geometry as architecture has been studied with example of buildings designed by Frank Lloyd Wright and Daniel Libeskind after which the influences of and on forms have been studied. In the next chapter, form finding and techniques used by Zaha Hadid and Santiago

Calatrava are discussed. In this chapter, how forms are realized with the help physical models is studied with the case study of the Guggenheim Museum Bilbao project. In the next chapter, the role of digital technology in the realization of unconventional forms for which, firstly, the extent of digital technology is explained and then in the visualization of the same. Following this, material-based forms are discussed by understanding the role of material and a few examples of material based forms and how materials enhance these complex forms is studied through a case study. At the end of this book, challenges in the realization of forms in contemporary architecture are discussed in various sections such as in the conceptualization and design, the material selection and integration, the construction and implementation and, finally, the cultural and social acceptance challenges. Lastly, the book will conclude by giving a few possible directions in which contemporary architecture can proceed.

1. CONTEMPORARY ARCHITECTURE

In broad terms, contemporary architecture is the architecture that is prevalent today. The term contemporary architecture also refers to a variety of styles of recently constructed structures and spaces that are designed for current use. It also includes recent decades, from the 1980s to the present. Contemporary architecture examples do not have essentially similar or simply recognizable features and attributes, but they are all the result of the "style", which is quite varied and contains a variety of influences. Frank Gehry, who designed the Guggenheim Museum in Bilbao, John Andrews, who designed the CN Tower in Montreal, and Jean Nouvel, who designed the Quai Branly Museum in Paris, are three prominent contemporary architects. (n.d., Futurist Architecture | Style | Modernism).

Although the terms "contemporary" and "modern" architecture are used interchangeably, they are not technically synonymous. The term "modern architecture" refers to the building styles of the early to mid-twentieth century (Chong, 2015). It had simple lines and a focus on function. (Refer Figure 1).

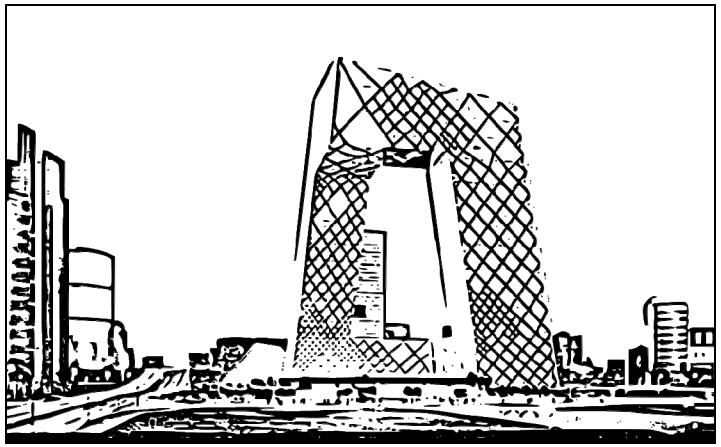

Figure 1 Example of contemporary architecture (Rem Koolhaas CCTV building)

Some people thought the elements that define modern architecture were too cold and indifferent. This conviction resulted in the development of what is now known as contemporary style. It, like the modern style, creates a link between the indoor and outdoor spaces. (Gupta, 2017).

Where previous styles were typically driven by a desire for specific aesthetic elements, need is the primary driving force behind contemporary architecture. Population growth, combined with a reduction in funds and some resources, is forcing communities to experiment with new ways of building and organizing space. One way to define the style is to identify the structures or designs that meet a pressing need in the immediate vicinity.

The modern architectural movement influences contemporary architecture design and architects. Clean lines and a clear conformity to form and function resulted in the birth of a more free-flowing open form of contemporary architecture. Although contemporary and modern architecture have different meanings, the trend towards more uniform form and style can be seen in many contemporary architecture design buildings. (Sinku, 2013).

Over time, the evolution of contemporary style itself resulted in the emergence of numerous offshoots, each with its own set of distinguishing features. Postmodernism, neomodernism, and deconstructivism were among them. Postmodern and neomodern architectural styles saw a return to ornamentation on building facades. Deconstructivism evolved from postmodernism and is distinguished by fragmentation ideas.

The scale or function of a given structure does not determine whether an architectural design can accurately be classified as contemporary. Skyscrapers in cities are known to lean towards this style, with dozens of floors and a massive scale of space. Residential homes, on the other hand, can have a modern appearance and feel. As a result, this style is not limited to scale or region, as it can be found in both rural and urban settings. (Gupta, 2017).

Contemporary architecture is distinguished by a growing awareness of its inherent complexities. While the concept of complexity in architecture is sometimes expressed in the form of complicated or complex building shapes, the actual complexity of design is difficult to grasp visually. Complexity in architecture can be better understood in terms of contingencies, performances, and potential effects rather than the composition of shapes

and objects. Any building project is heavily reliant on a unique set of theoretical, practical, ecological, economic, political, social, and cultural parameters that presuppose architecture's design and performance. Architecture, in turn, influences all of these parameters. (Moe, 2008).

A diverse and ever-evolving field, contemporary architecture is characterized by a wide range of styles, techniques, and approaches. Having said that, there are a few characteristics that are present in many modern structures:

Emphasis on sustainability: environmental sustainability is frequently given priority in contemporary architecture, with an emphasis on lowering energy consumption, utilizing renewable resources, and creating structures that blend in with their surroundings.

Flexibility and adaptability: contemporary structures frequently feature open floor plans and multipurpose spaces that can be easily reconfigured to meet changing needs. This flexibility and adaptability are key components of their design.

Integration of technology: contemporary architecture frequently uses cutting-edge technologies and materials, such as digital fabrication methods, smart building systems, and composite and bio-based materials.

Attention to detail: with an emphasis on fine materials and craftsmanship, many contemporary buildings have intricate and detailed designs.

Integration with the surrounding environment: by blending the boundaries between indoors and outdoors and fostering a sense of harmony between the built environment and nature, contemporary architecture frequently aims to integrate structures with their natural surroundings.

Minimalist aesthetics: the minimalist aesthetic of many contemporary designs is characterized by clear lines, straightforward forms, and a preference for functionality over ornamentation.

Use of light and space: with large windows, skylights, and open floor plans that let natural light flood the space, contemporary architecture frequently plays with light and space to create dynamic and engaging environments.

Overall, innovation, experimentation, and a readiness to question conventional methods of design and construction are characteristics of contemporary architecture.

1.1 Historical Overview of architectural form

The design and construction of buildings, structures, and other physical spaces is the art and science of architecture. It dates back to the beginning of civilization and is one of the most significant and ancient human achievements. Architecture has changed throughout history to reflect the shifting needs, aspirations, and values of various societies and cultures. The major architectural forms and styles that have developed since antiquity, from the prehistoric era to the present, are discussed historically in this section.

Prehistoric Architecture - over 10,000 years ago, during the prehistoric era, the earliest structures made by humans were discovered. These were plain homes constructed from raw materials like wood, stone, and animal hides. The megalithic buildings found in Europe, such as Stonehenge in England and Carnac in France, are the most well-known examples of prehistoric architecture. Massive stones were used to construct these structures, and it is still unclear what they were intended to represent, but they are believed to have served as places for ritual and spiritual activities. Moreover, these structures also reflect the technological advancements of prehistoric architecture. Prehistoric architecture relied on technology and construction techniques that were suitable for the available resources in the specific region. For example, the construction of megalithic structures required advanced knowledge of quarrying, shaping and transporting large stones.

Archaeological evidence from Late Paleolithic, Stone Age, Bronze Age and Iron Age sites in various regions suggests that prehistoric settlements varied greatly in terms of their complexity, size and purpose. Despite this variation, prehistoric architectural structures were primarily focused on providing shelter and protection from natural elements and predators. Moreover, the architectural advancements and evolution during this period are believed to be influenced by socio-cultural factors. The development of prehistoric architecture has been linked to the evolution of shelter and settlements. The earliest structures were simple shelters made from raw materials that primarily served as protection against harsh weather and predators. As societies developed and people began to lead sedentary lifestyles, more permanent structures were constructed. These structures became more elaborate over time, incorporating new building techniques and materials.

Ancient Architecture - the first advanced architectural styles and methods were developed by the ancient civilizations of Egypt, Greece, and Rome. Massive stone structures like the pyramids and temples were erected in Egypt to pay homage to the gods and remember the pharaohs. Doric, Ionic, and Corinthian architectural orders were frequently used in Greek architecture, which was at its height between the seventh and fourth centuries BCE. Symmetry and proportion were also stressed. Greek architecture had a significant impact on Roman architecture, which first appeared in the second century BCE. Etruscan and Egyptian architectural elements were also incorporated. Massive public structures like temples, amphitheaters, and aqueducts, as well as avant-garde constructions like the Pantheon and the Colosseum, were built by Roman architects.

Medieval Architecture – Romanesque and Gothic were the two main architectural movements that emerged during the mediaeval era. Round arches, substantial pillars, and thick walls are characteristics of Romanesque architecture, which emerged in the 11th and 12th centuries. The cathedral of Santiago de Compostela in Spain and the abbey church of Sainte-Foy in Conques, France, are two of its most well-known examples. It was primarily used for churches and monasteries. Pointed arches, ribbed vaults, and flying buttresses are characteristics of Gothic architecture, which first appeared in the 12th century. The Notre Dame de Paris, Westminster Abbey in London, and the Cologne Cathedral are some of its most well-known examples. It was primarily used for churches and cathedrals.

Renaissance Architecture - the 14th century saw a resurgence of interest in classical arts and sciences, which spread to the rest of Europe in the 15th and 16th centuries during the Renaissance. Columns, pediments, and domes are just a few examples of the classical forms and motifs that define Renaissance architecture. Its emphasis on symmetry, proportion, and perspective are additional characteristics. The Palazzo Rucellai, Palazzo Pitti, and the Louvre in Paris, France, are some of the most well-known examples of Renaissance architecture. They are all located in Florence, Italy.

Baroque Architecture – the simplicity and restraint of Renaissance architecture gave way to baroque architecture in the 17th century. Ornate decoration, dramatic use of light and shadow, and grand scale are characteristics of baroque architecture. The Church of the Gesu in Rome, the Palace of Versailles in France, and the Church of San Carlo alle Quattro Fontane in Rome are some of the most well-known examples of

baroque architecture, which was primarily used for churches, palaces, and public structures.

Neoclassical Architecture – neoclassical buildings are distinguished by their use of classical orders like the Doric, Ionic, and Corinthian. Neoclassical architects sought to recreate the elegance and simplicity of ancient Greek and Roman architecture. The Brandenburg Gate in Berlin, Germany, and the United States Capitol in Washington D.C. are two of the most well-known examples of neoclassical construction.

Victorian Architecture – during Queen Victoria's reign in England in the middle of the 19th century, Victorian architecture began to take shape. It is distinguished by its eclectic mingling of architectural styles, which includes Gothic Revival, Italianate, and Queen Anne. Victorian architecture is frequently ornate and complex, with minute details and a wide range of decorative elements. The Victoria and Albert Museum and the Houses of Parliament in London are two of the most well-known examples of Victorian architecture.

Modern Architecture - the early 20th century saw the emergence of modern architecture, which embraced new materials and technologies while rejecting conventional architectural styles. Buildings designed by modernist architects frequently had clear lines, straightforward forms, and a lack of ornamentation in order to be practical, effective, and visually arresting. The Sydney Opera House in Australia, the Seagram Building in New York City, and the Bauhaus school in Germany are some of the most well-known examples of modern architecture.

Postmodern Architecture - in response to the perceived sterility and rigidity of modern architecture, postmodern architecture first appeared in the latter half of the 20th century. Buildings designed by postmodern architects tended to be more playful, eclectic, and expressive due to their incorporation of elements from popular culture and historical styles. The Walt Disney Concert Hall in Los Angeles, the Centre Georges Pompidou in Paris, and the AT&T Building in New York City are some of the most well-known examples of postmodern architecture.

Contemporary Architecture - contemporary architecture is distinguished by its variety and experimentation, which reflects the shifting demands and ideals of society in the twenty-first century. Contemporary architects are constantly experimenting with new materials, technologies, and forms to produce structures that are environmentally friendly, flexible, and

responsive to their surroundings. The Shard in London, the Beijing National Stadium, and the Burj Khalifa in Dubai are some of the most well-known examples of contemporary architecture.

1.2 Contemporary architects

Few of the leading architects and their renowned works in the field of contemporary architecture are as follows:

- Frank Gehry's works are instantly recognizable, as they are the most distinctive and innovative architectural phenomena on the world. Tourists flock to all of his buildings worldwide to marvel at the architectural forms he creates, making his deconstructive forms iconic. Vanity Fair named him "the most important architect of our time," and he has set the standard for contemporary architecture (Francisco, 2013). His most notable accomplishment is his ability to create spaces that manipulate forms and surfaces. The Walt Disney Concert Hall in Los Angeles, The Guggenheim Museum in Bilbao, Der Neue Zollhof in Düsseldorf, and the Marqués de Riscal Vineyard Hotel in Elciego are among his most notable projects.
- Frank Lloyd Wright: Frank Lloyd Wright is widely regarded as the greatest architect of all time. He saw interior and exterior spaces as one and was ahead of his time in building forms and construction methods, despite never attending a formal architecture school. His humble American upbringing led him to study under Louis Sullivan, another architectural legend, and Wright is still remembered for his prairie-style buildings and organic influences. Even after nearly 150 years, his organic and natural forms that seemed to become one with nature, as well as his innovative detailing, are still regarded as the best building and design concepts. The Guggenheim Museum in New York City, New York, the Fallingwater Residence in Mill Run, Pennsylvania, the Arizona State University Gammage Auditorium, and Taliesin West, Wright's home and studio in Scottsdale, Arizona, are among his most notable projects.
- Zaha Hadid: The legendary Zaha Hadid was the first female architect to win the Pritzker Architecture Prize. Hadid, who was born in Iraq, went on to win this iconic award, which is often referred to as the "Nobel peace prize of architecture." Hadid's forms are futuristic, unconventional, daring, and artistic.
- Ludwig Mies van der Rohe: Known colloquially as "Mies," the German-American architect is regarded as a forefather of modern

architecture alongside Le Corbusier and Walter Gropius. Mies was known for his minimalist and "less is more" approach to architecture, and one of his most notable architectural features was the use of plate glass and structural steel to divide interior spaces. Van der Rohe was the first to think of innovative open floor plan concepts, and many of his interior concepts and furniture styles are widely used in today's architecture and interiors.

- Daniel Libeskind: Libeskind's first major international success was the Jewish Museum in Berlin. Other notable works include Dublin's Grand Canal Theatre, England's Imperial War Museum North, and the Frederic C. Hamilton Building (refer Figure 2).

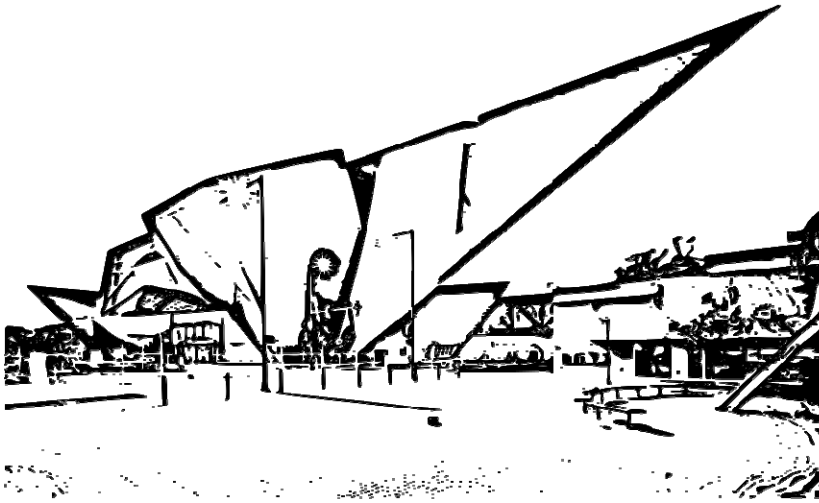

Figure 2 The Frederic C. Hamilton Building by Daniel Libeskind
(Mymodernnet, 2010)

- Norman Foster was awarded the Pritzker Prize in 1999. In their 45-year history, Foster + Partners has received over 470 awards and citations for excellence, including Gold Medals from the RIBA and the AIA. Foster's most notable works include the Beijing Airport, Dresden Railway Station, Boston Museum of Fine Arts, Stanford University research centers, the Smithsonian Institute in Washington, and the London City Hall (refer Figure 3).

Figure 3 Norman Foster, London City Hall **(Chris, 2006)**

Santiago Calatrava, Rem Koolhaas, SOM, Oscar Niemeyer, etc., are a few names which are famous for their contemporary works.

1.3 Methodologies and philosophies of contemporary architects

Since the 1970s, architectural styles have become more fragmented, with post-modernists, neo-modernists, deconstructivists, contextualists, expressionists, and so on, are among what could be called contemporary architects. 'Contemporary architecture' suggests an anti-vernacular position, at ease with new materials and non-local materials and forms, and employing contemporary architectural language, i.e., not generally steeped in past typographies or traditions.

It is not simply anti-vernacular, but it is also architecture that draws on a variety of influences while remaining aspirational, visionary, risky, and innovative in its use of new materials. Architects today strive to push the boundaries of materials, technology, and, in recent decades, geometry. The term "Modern Architecture" only refers to the architecture of the Modern Movement, in which "form follows function" and the "house is a machine for living in." However, Modernism was such a significant movement (which initiated a change in thinking at the time) and influenced all

architects since that it is more than just an architectural style like ‘Arts and Crafts’ or ‘High Tec’.

The Modern Movement has influenced almost every contemporary architect. Le Corbusier’s modern architecture of white walls, fenetre longuer, pilotis, and architectural promenade was a major influence for many. He described not only a vision of future cities with master planning sketches and models, but also a type of “programme” and “narrative” for all buildings, particularly modern houses. He worked for a number of wealthy clients and was successful in pushing the boundaries of almost every building he worked on.

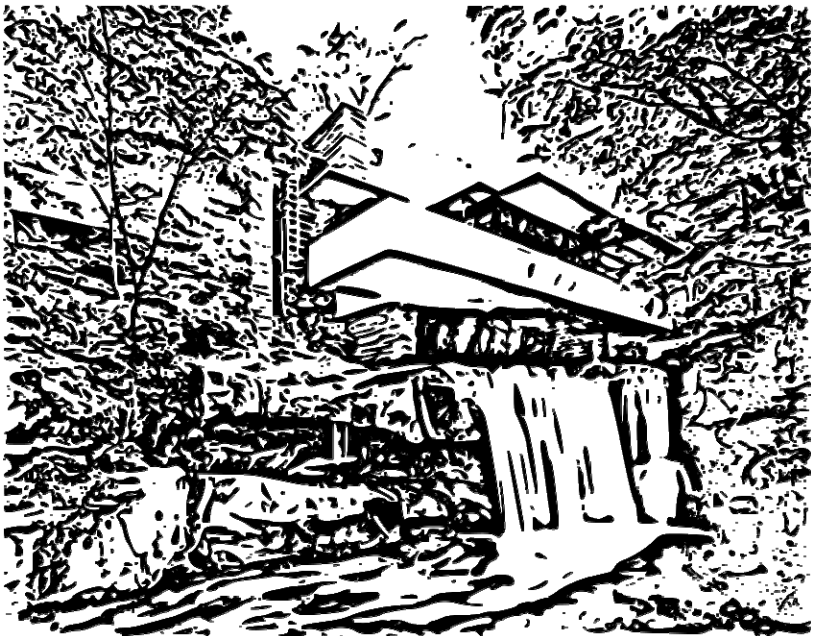

Figure 4 Frank Lloyd Wright’s Fallingwater showing the organic architecture

Frank Lloyd Wright was fascinated by the interaction between buildings and their surroundings. He believed that a structure should complement its surroundings in order to create a single, unified space that appears to “grow naturally” out of the ground (refer Figure 4). He also believed that a building should function as a cohesive organism, with each component of the design relating to the whole. Wright’s organic architecture frequently incorporates natural elements such as light, plants, and water. Organic

architecture came to describe Wright's overall design ideology after years of study and experimentation. This philosophy's governing principles included the following:

The belief that a structure should appear to grow naturally from its surroundings;

- Selecting one dominant form for a building and incorporating it throughout;
- Using natural colors, "look for colour schemes in the woods and fields.";
- Disclosing the composition of materials;
- Making more room;
- Making room for natural foliage.

The principles of organic architecture can be seen in another of Wright's structures, the private residence known as Fallingwater in Bear Run, Pennsylvania.

1.4 Features

Some of today's most popular building styles have been influenced by contemporary architecture. Structures ranging from single-family homes to business office buildings are built in modern styles that look as fresh today as they did a decade ago. While it is difficult to provide an exhaustive list of the characteristics associated with the style, buildings within the movement can usually be broadly identified as well as their individual styles.

In many ways, contemporary architecture is a catch-all term for contemporary styles that share a variety of characteristics but have yet to be classified. The term "contemporary" is also slightly misleading because it can refer to buildings that are 70 or 80 years old. However, in an age when classic building architecture styles are as popular as new ones, it is critical to have a broad understanding of what distinguishes the two. Thus, contemporary architecture is generally recognized as a movement that employs few, if any, traditional building methods and ornamentation features. Contemporary architecture is also one of the first architectural movements to embrace entirely new building methods and forms based on functionality rather than style.

One would think that contemporary architecture would be all futuristic and out of the ordinary, but this is not the case (Moffat, 2007). Instead, contemporary architects are concerned with four major concepts:

- The use of old structures to create something new
- Organic architecture tries to blend in with its surroundings by being curvy and sometimes incorporating plants into the structural design
- Deconstructivism (explained below)
- Making use of computers to assist in the design process

A few more characteristics that aid in identifying and distinguishing a modern building are as follows:

- Attempt to push the boundaries of material, technology, and geometry
- Changes in accepted tradition and taste
- Innovative application of new materials
- Utilization of nature
- Utilization of modern technology

Organic architecture is another term for contemporary architecture styles. This is because the style incorporates the natural surroundings near and around the construction site as a design element. Trees and plants can be both a part of and an element of a structure. Energy efficiency is promoted, and the structure is designed to be environmentally friendly.

1.5 Summary

Contemporary architecture does not have a very specific style. Architectural styles like, deconstructivism, futuristic design, blobitecture, computer aided design, conceptual architecture, etc., are few styles which are recognizable in the field of contemporary architecture. Contemporary architecture is distinguished by the following characteristics: an attempt to push the boundaries of material and technology, particularly geometry; changes to accepted tradition and taste; the use of new materials in novel ways; and the use of contemporary technology.

Contemporary architecture is characterized by a growing awareness of its inherent complexities. It is also a wide range of styles, techniques, and approaches, such as emphasis on sustainability, flexibility and adaptability, integration of technology, attention to detail, integration with the surrounding

environment, minimalist aesthetics, use of light and space, innovation, experimentation, and a readiness to question conventional methods of design and construction. The concept of complexity in architecture is difficult to apprehend visually, but it can be better understood in terms of its contingencies, performances and potential effects.

2. FORM AS A FEATURE

The shape or configuration of a building is referred to as its form. The primary elements of architecture are form and its polar opposite – space. In terms of function and technique, the architect is accountable to cultural patterns on the one hand and technological patterns on the other; however, in terms of form expression, he is free to communicate his own personality and concepts. As in other arts and sciences, a few individuals create new styles, and others imitate them by interpreting them in unique and personal ways. The majority, on the other hand, accepts styles as a given and perpetuates them without leaving their mark. The primary responsibility of the architect in the formation of style is to create meaningful form. When the term "form" in the arts refers to a work's physical shape, size, and mass, it also refers to all of the elements that contribute to the work's aesthetic structure and composition. Many of these may lack a fixed form of their own—a rest in music, a line in painting, a space in architecture—and gain significance only when organized into the final product. In this sense, the basic formal elements of architecture are space and mass. Composition is the process of organizing these elements into an ordered form, and the primary means by which they are given expressive quality are scale, light, texture, and color (Ackerman, 2013).

The case study, which examines why a particular built form was used and how it enhances the aesthetics of that particular building, can help you understand the role of forms in architecture. We can see how the chosen forms were used by comparing two buildings with similar programmatic uses, in this case recent museum projects. The first example is Renzo Piano Workshop's Metropolis Museum in Amsterdam (refer Figure 5). The large literal size, gigantic scale, and homogeneous, light-absorptive copper cladding of the building exterior reinforce the simple building shape. Complex form and surface articulation are purposefully avoided in order to emphasize the singular form. Because the museum is built above a highway harbor tunnel portal within an industrial harbor landscape, the scale and materiality of the surrounding architectural context are quite appropriate.

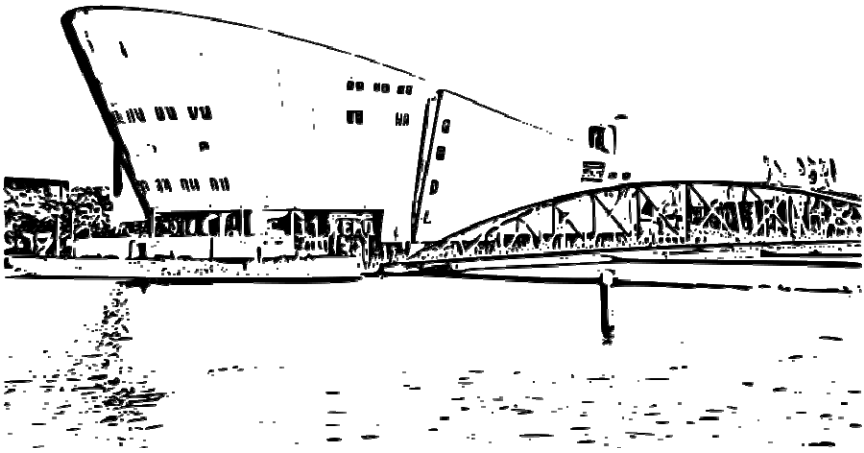

Figure 5 Metropolis Museum in Amsterdam designed by Renzo Piano
(Phoebe Crisman, 2007)

The second example is Frank Gehry Architects' Guggenheim Museum in Bilbao, Spain. Although large in literal size, this design employs a complex, non-rectilinear shape that reduces the building scale through form and surface articulation. The use of light reflective titanium exterior cladding further dematerializes the building form and allows light and shadow to modulate the exterior surface continuously.

In both cases, a careful combination of architectural qualities—shape, size, scale, articulation, texture, and color—work together to produce the desired form, influencing the overall perception of the form. (Crisman, Phoebe, 2007)

Since the beginning of the profession, the interaction between form and function has been a major concern in architecture. At the most fundamental level, a building's form refers to its outward appearance, whereas its function refers to its intended use or purpose. In traditional architecture, form and function were frequently intertwined, with buildings such as churches, courthouses, or homes being designed to meet particular functional requirements. Contemporary architects aim to design buildings that are both functional and aesthetically pleasing, so the relationship between form and function is frequently more complicated.