AN APPRAISAL OF THE ARCHITECTURE CAREER OF SIR NORMAN FOSTER

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Abstract
Modernism is a philosophical movement that began during the late 19th and early 20th century as a result of cultural trends and changes in western society. Modern architecture was as a milestone in the history of Western architecture, because for the first time, the attitude of the tradition, history and past changed its direction as a source of inspiration of architecture and future and development were introduced as main objective and subject of architecture. Many projects of the modernist era were initially successful, and the public came to associate this strong aesthetic with prosperity and progress. In the post war era (WORLD WAR II), the ambitions of the modernists and their "strong sense of social responsibility in that architecture should raise the living conditions of the masses." seemed so progressive and promising that it was understandable the Architectural Review should herald the movement as the style of the century. A celebration of Modernist architecture in Britain; a collection of fifty illustrated profiles of some of the best Modernist buildings in Great Britain and Northern Ireland. British architecture embraced Modernist architecture, a style which had evolved in Continental Europe, during the inter-war period between the two World Wars. Modernism in its most general sense is a term that applies to all modern architecture of the twentieth century. The architect that promote modernism in Britain during this era are; Richard George Roger, Norman Foster and Sir Ove Nyquist Arup. This research will specifically talk about Norman Foster's architecture and how he reflects modernism in his architecture. One of his building was used for this research; Sainsbury Centre for Visual art in Norwich was used as a case study to evaluate the modernism architecture movement in Britain.

Keyword: Modernism, Modern Architecture, Norman Foster, Britain Architecture, Sainsbury Visual Centre

Introduction

Architecture determines the facts or superior values as associate art works and architecture. Architecture offers visual expression of design concepts. Architecture create significant something for human, as a result of the organize design fact. Architecture as a creative art represents the culture and civilization of a nation and race. So, we need somehow to review their architectural design for a full understanding of humanity and his/her opinions, whether within the past or present. There's little doubt within the importance of architecture and its advantages and its efficiency. However, with the arrival modernism in architecture, special amendment was created within the architecture and created changes in different arts and even in human thinking. With the arrival of this style of design will now not define a special feature for various architectures and somehow brought uniformity in architecture.

In today's field of design, the first concepts of rationalism came back to 17s century. Along with this era theoretical writings, it is possible to understand the notion of using primary geometric forms; cubes, prisms, cylinders, pyramids, and cones. Thus, at this time architectural language was reduced to these basic rational geometric forms, and typologies. This language of design has been called as rationalism, which was discussed as the aspiration for the modernism (Robert, L. 2020).

By the end of 19s century and early 20s century the modern architecture movement, has been introduced. At that time, Le Corbusier recognized the beauty of purity, simple primary geometric forms and explained his ideas based on them. These geometric forms are the major primary ones in the modern language design. Their images are understandable without giving a complication, hereby they are felt as beautiful; that everyone accepts them (Spurr, 2022). Indeed, it can be said that the 'box' shapes are one of the most important starting points in the field of architecture. It continues today as these simple rational forms of human mind. It can be interpreted that modernism defines by purity, simplicity, rationality and functionality.

This research paper aims to assess modern architecture, history and the movement of modernism in architectural history in British. The reflections of the modernism in British architecture and the architects that take the modern architecture movement whereby Norman foster is one of them. Furthermore, highlighting the practical application of the modernist theory in Norman Fosters architecture and assessing the reflection of the modernism in his design solutions and architecture. This paper mainly takes modernism as the research scope in modern era. The Modern movement is divided in regions whereby there are; the American modernism most known as the "Chicago High Rise", the "German Engineering", "British Renaissance", and also in Asia popularly known as "The Post-Metabolism". Based on these movements in different regions across the globe, British Renaissance is focused in this research paper. During the British renaissance, there are different engineers and architects that did promote modernism in Britain, One of such architects is Norman Robert Foster, which also this research scoped down to his architecture.

Modernism In Architecture

Modernism is an international design and style movement that emerged during the Twenties as a response to accelerated industrialisation and social changes. Following 'order' and 'universals' in design. Modernism used new materials and advanced technology and rejected, ancient, historical concepts and designs, and ornamentation. Modernism emphasised function, simplicity, and rationality, and created new styles of expression with a brand new aesthetic (Robert, L. 2018).
This new aesthetic resulted in modern buildings that are characterised by clean lines, easy geometric shapes, pure cubical forms, ribbon windows, flat roofs, and useful, versatile open interior spaces with plain exposed structures that were thought-about applicable for all nations and cultures.
It has additionally been known as International Modern or International style, when an exhibition of modernist architecture in America in 1932 by Philip Johnson was held. Modernism also encompasses Futurism, Constructivism, and Bauhaus design. Modernism is characterised by:

1. Asymmetrical compositions
2. Use of general cubical or cylindrical shapes

3. Flat roofs
4. Use of concrete
5. Metal and glass frameworks typically leading to large windows in horizontal bands
6. An absence of ornament or mouldings
7. A tendency for white or cream

Plans would be loosely organized, typically with open-plan interiors. Walter Gropius (1883-1969) and Le Corbusier (1887-1965) were the leaders of the movement. The latter had a profound impact in Britain, notably after World War 2, with several housing development schemes (Robert, L. 2018). In Britain the term modern Movement was used to describe the rigorous Modernist styles of the Nineteen Thirties to the first Nineteen Sixties, and they describe modern buildings as:

i. Rectangular or cubical shapes
ii. Minimal or no ornamentation
iii. Steel and or concrete
iv. Large windows
v. Open plan

Modernity Abide

Modern architecture was as a milestone in the history of Western architecture, because for the first time, the attitude of the tradition, history and past changed its direction as a source of inspiration of architecture and future and development were introduced as main objective and subject of architecture. Architects and theorists tried to make homogeneous the architecture as a science and technology with evolving world (Amiri N, 2016). Modern architecture emerged in the form of global style, the style that took root after the First World War (from1940) and spread in the reconstruction of Europe after the Second World War (from 1960). This style had its claim to reform architectural process and building design with abandon the no planning and traditional management through the adoption of a global system of architecture (Robert, L. 2018). This new architecture was organized with the norms of rational and used of one of the most efficient materials such as concrete, steel and glass (Amiri N, 2016).

Modern architecture is divided into three periods: Early Modernism (roughly 1890s-1930s), High Modernism (1930s-1960s), and Late Modernism (1960s onwards). However, in its early modernism, it is divided in to three; Chicago movement, art movement and the movement of Futurism styles. supreme modern architecture, or the top of modern architecture was formed between the two World Wars 1 and 2, means mainly in the twenties and thirties AD in Europe and in the early modern period still historicist styles such as Neo classical, romantic and especially eclectic had important as the popular and common styles in the west. One of the key and very important issues was the issue of industry, industrious production and technology in the excellence modern era (Amiri N, 2016). Le-Corbusier considered the use of steel girders and concrete and prefabricated, as the path of the future architecture and knows the pre-fabricating and high-rise making as only solution of future cities. Later modern architecture can be considered after World War II to the early 70's (Amiri N, 2016).

Features Of Modern Architecture

Modern architecture focuses first and foremost on the efficiency and pragmatism and uses the style and tools that has not had a history of such use to this size and in a way tries to develop in the modern era and uses all possibilities to achieve this purpose (Amiri N, 2016). This use causes to restrict the human role in its creating and whether causes to superior the technology on human. This goal is possible better that is with the lowest cost and highest performance and the best way is that we resort to technology and scientific estimates. Modern architecture at the same time, has a holistic mode, means due to the fact that buildings are built in industrial way finds breadth and comprehensiveness and is not for the unique of a person or a particular style (Robert, L. 2018).

This architectural style acts to meet the needs and because it uses a single form is the anti-decorated, anti-show, anti-metaphor, anti-historical, anti-remembering and anti-humour and the meaning has been lost in this architectural style in a way (Amiri N, 2016).

British Renaissance (Modern Architecture Movement)

The British Renaissance, a term often used in the context of architecture, refers to the English Renaissance, which is a period of architectural history and cultural revival in England that occurred during the late 15th to early 17th centuries. It's characterized by the adoption of Renaissance architectural principles, particularly from Italy, and their fusion with existing English architectural traditions. British Renaissance was a period distinct from modern architecture, it's important to note that it paved the way for some of the principles that later became prominent in modernism. The Renaissance's emphasis on symmetry, proportion, and balance in design laid a foundation for the functional and minimalist approach that characterized modern architecture.

The English Renaissance, often referred to as "the Elizabethan era", created an immense stimulation in the arts, literature, music, and architecture throughout all of England. Next to the arts and literature, architecture proved to be one of the most distinguishing aspects of the English Renaissance. Many new styles of architecture, as well as architects emerged during this period, becoming known throughout time.

During the era of the modernism in Britain, there are some group of architects that contribute and, in many ways, did for British engineering and architecture. These architect are as follows;

i. Richard Gorge Roger
ii. Norman Robert Foster
iii. Sir Ove Nyquist Arup
iv. Berthold Lubetkin
v. Maxwell Fry
vi. Walter Gropius

Ove Arup in many ways did for British engineering and architectural thought. He was born in England to Scandinavian parents, educated in Denmark and Germany, and returned to England to open his first engineering office in 1923 (Mallgrave and Goodman, 2012). In the early 1930s he drew close to a circle of modernists that included Berthold Lubetkin, Maxwell Fry, and Walter Gropius, for whom he provided the structural design for the ramps of the Penguin Pool at the London Zoo (1933–1934) as well as the concrete flats of Highpoint I and II (1933–1934). After the war, in 1949, Ove reformed the Arup Partnership, but what gained him international prominence was his later involvement with the Sydney Opera House (Mallgrave and Goodman, 2012). The architectural competition was won in 1957 in a dramatic way by Jørn Utzon but with a design that was flawed in its execution. Design delays and cost overruns nearly scuttled the project until – in 1961 – Arup reconfigured the roof shells to one and the same radius. Although the attribution of this idea to Arup remains contested, no one disputes Arup's role in bringing the intricate work to a successful conclusion after Utzon resigned from the project in 1966. When the Opera was completed in 1973, Arup's firm, now also enlarged with an architectural division, was a rival to SOM in both staff and influence (Mallgrave and Goodman, 2012).

Arup's global accomplishments also inform the work of Richard Rogers and Norman Foster. Rogers, the elder by two years, was born in Florence in 1933 to a British father and Italian mother, and the family later immigrated to England under the pressures of the unfolding war (Mallgrave and Goodman, 2012). With the encouragement of his cousin Ernesto Rogers, Richard attended the Architectural Association in the mid-1950s and in 1961 he won a traveling fellowship to Yale. It was there that he met Foster, who had recently completed his architectural studies at Manchester University. The two students studied under Paul Rudolph (for whom Foster briefly worked), Serge Chermayeff, Vincent Scully, and the visiting critic James Stirling. In the United States, Foster and Rogers were attracted to the ideas of Buckminster Fuller and the work of Louis Kahn, Eero Saarinen, Frank Lloyd Wright, and the Case Study architects (Mallgrave and Goodman, 2012).

Back in London in 1963, Rogers and Foster, together with Wendy and Georgia Cheesman, formed up a partnership known as Team 4 (British Architecture Firm). Two early commissions, Creek Vean House, in Cornwall (1964–1966), and Skybreak House, Hertfordshire (1965–1966), are transitional designs within the careers of both men. The terraced forms and concrete-block finishes of the former have often been attributed to the influence of Wright and Atelier 5, while the cinematic open-plan and high-modern interiors of the latter prompted Stanley Kubrick to use it to film one of the rape scenes of A Clockwork Orange (Mallgrave and Goodman, 2012). The defining commission for both men, however, was Reliance Controls in Swindon (1965–1966), an electronic factory, where they began mastering the nuances of industrial detailing – in the tradition of the Case Study architects of California. Designed on a very limited budget, the lightweight, corrugated steel shed was detailed in a minimalist vein. Both men thus embraced naked technology and a coolly efficient style of engineering, but the partners split up after the project's completion (Mallgrave and Goodman, 2012).

Norman Robert Foster

Sir Norman Foster is a prominent and prolific British architect known for his innovative, stylish structural designs, as seen with edifices like Berlin's Reichstag, New York City's Hearst Tower and London's City Hall.

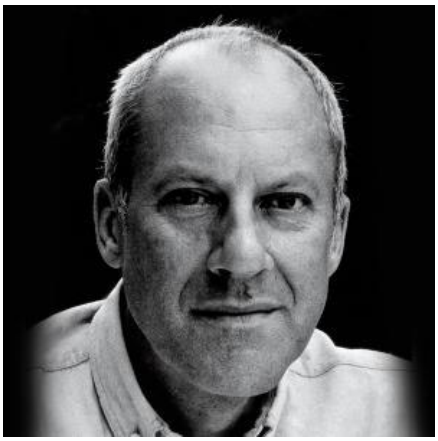

Figure 1: Norman Robert Foster
Source: https://cdn20.pamono.com/l/m/2016/06/0000056514-1144x1144/norman-foster.jpg

Born in 1935 in Manchester, England, Sir Norman Foster is an award-winning and prolific British architect known for sleek, modern designs of steel and glass with innovations in contouring and inner space management. He was part of the architectural group Team 4 before branching off on his own to form what would eventually be known as Foster + Partners. Foster earned acclaim for his design of the Willis Faber & Dumas headquarters in the early '70s and was later responsible for the updated Reichstag in Berlin after the reunification of Germany as well as the Hearst Tower in New York City. His design practice has overseen an array of heralded structures around the globe.
He went on to study architecture at the University of Manchester and won accolades for his drawing work, developing a lifelong passion for sketching. He later earned a scholarship to Yale University's School of Architecture, earning his master's in 1962.

While at Yale, Foster met Richard Rogers, with the two eventually becoming part of the architecture world's elite. In 1963, Foster, along with Richard and Su Rogers, his future wife Wendy Cheesman and her sister Georgina Wolton, formed the architectural organization Team 4. Foster broke off on his own in 1967 to form Foster Associates, which would later become Foster + Partners.
In the early 1970s, Foster had his big break with the design of the Willis Faber & Dumas headquarters in Ipswich, a low-rise office building that was innovative for its use of escalators, contoured facades and idyllic, nature-oriented interiors. The late '70s and early-to-mid- '80s saw Foster and his team working on the Hong Kong and Shanghai Banking Corporation headquarters, a modern three-tower edifice, while the '90s saw the architect heading up an update of the Reichstag in Berlin, rebuilding the emblematic glass dome after the unification of East and West Germany. In

the early 2000s, Foster also contributed to the iconic New York City skyline with his design of the Hearst Tower, a 44-story skyscraper with a triangulated facade atop an Art Deco foundation.

Figure 2: Willis Faber and Dumas Headquarters, Ipswich, United
Source: https://www.fosterandpartners.com/media/hero.jpg?width=1920&quality=85

Figure 3: Honk Kong HSBC Building.
Source: https://www.fosterandpartners.com/media/hero.jpg?width=1920&quality=85

Figure 4: Hearst Tower in New York
Source: https://www.fosterandpartners.com/media/hero.jpg?width=1920&quality=85

Other renowned Foster-designed structures include the Sainsbury Centre for Visual Arts in Norwich, Kuala Lumpur's Troika Towers, Frankfurt's Commerzbank, Hong Kong International Airport and London's City Hall and Millennium Bridge. (The latter structure, which utilized lateral suspension techniques, underwent repairs days after its inauguration by Queen Elizabeth, to rectify wobbliness caused by heavy foot traffic.) The Millennium Bridge is London's first dedicated pedestrian bridge and has become a new landmark of the 21st century.

Figure 5: Sainsbury Centre for Visual Arts in Norwich.
Source: https://www.fosterandpartners.com/media/hero.jpg?width=1920&quality=85

Figure 6: Commerzbank Tower-1997-Frankfurt, Germany
Source: https://www.fosterandpartners.com/media/hero.jpg?width=1920&quality=85

Figure 7: London City Hall Building
Source: https://www.fosterandpartners.com/media/hero.jpg?width=1920&quality=85

Case Study: Sainsbury Centre For Visual Arts In Norwich.

The Sainsbury Centre was constructed through 1977 and opened in 1978. It stands on the edge of the University of East Anglia (UEA) campus, initially developed to the plan and designs of Denys Lasdun within the Nineteen Sixties, and to the west of the Grade II• listed Norfolk and Suffolk Terrace, the listed Teaching Wall and the library to the university. The centre was built in order to store the art collection of Lord and Lady Sainsbury, the founders of the Sainsbury supermarket chain and noted collectors and supporters of the arts. After a successful exhibition in the Netherlands, they approached the UEA Vice Chancellor, Frank This Lewthwaite, who had established the university's School of Fine Arts and Music and donated their collection in 1973. It quickly outgrew its accommodation, and it was clear that a purpose-built home was required. In 1974 Norman Foster met Lord and Lady Sainsbury to discuss the commission and the building work began in 1977. Foster's brief was very specific, based on the Sainsburys' experience of art galleries around the world.

Figure 4: Sainsbury's art centre Norwich
Source: https://www.arch2o.com/wp-content/uploads/2016/01/Arch2O-Sainsbury-Center-for-Visual-Arts-09.jpg

Evaluation

The structural frame is composed of trussed, tubular steel, prismatic latticework, columns and single-span beams, which in series form 36 bays. The frame is clad with sheet aluminum panels and is glazed in part.

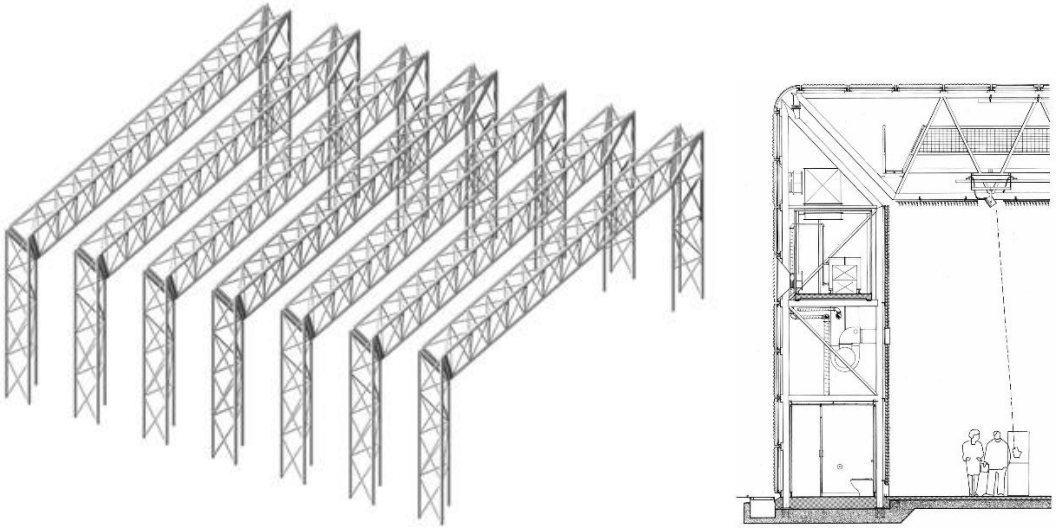

Figure 5: structural framing system
Source: https://www.tboake.com/SSEF1/SAINSBURY/Multi-bay_Sainsbury_Inmos.jpg

Based on the review mention on modern architecture, one of the characteristics of modernism is the use of steel and concrete at the materials of the building. Norman foster uses steel all through as the structure of this building and this masterpiece of design is also known as high tech design. Now taking to heart Fuller's frequently posed question "How much does the building weigh?" (Mallgrave and Goodman, 2012). This was his thought when developing the Sainsbury's Art Centre.

In modernist architecture, the use of large glass opening is one of the significant characteristics and in this case, Norman Foster also integrate this idea by having the high and wide glass façade at the sitting area of the restaurant having an elegant view of the nature from inside; according to Norman Foster is the "is the perfect place to enjoy a light bite and have a nice view" as shown in the figure below;

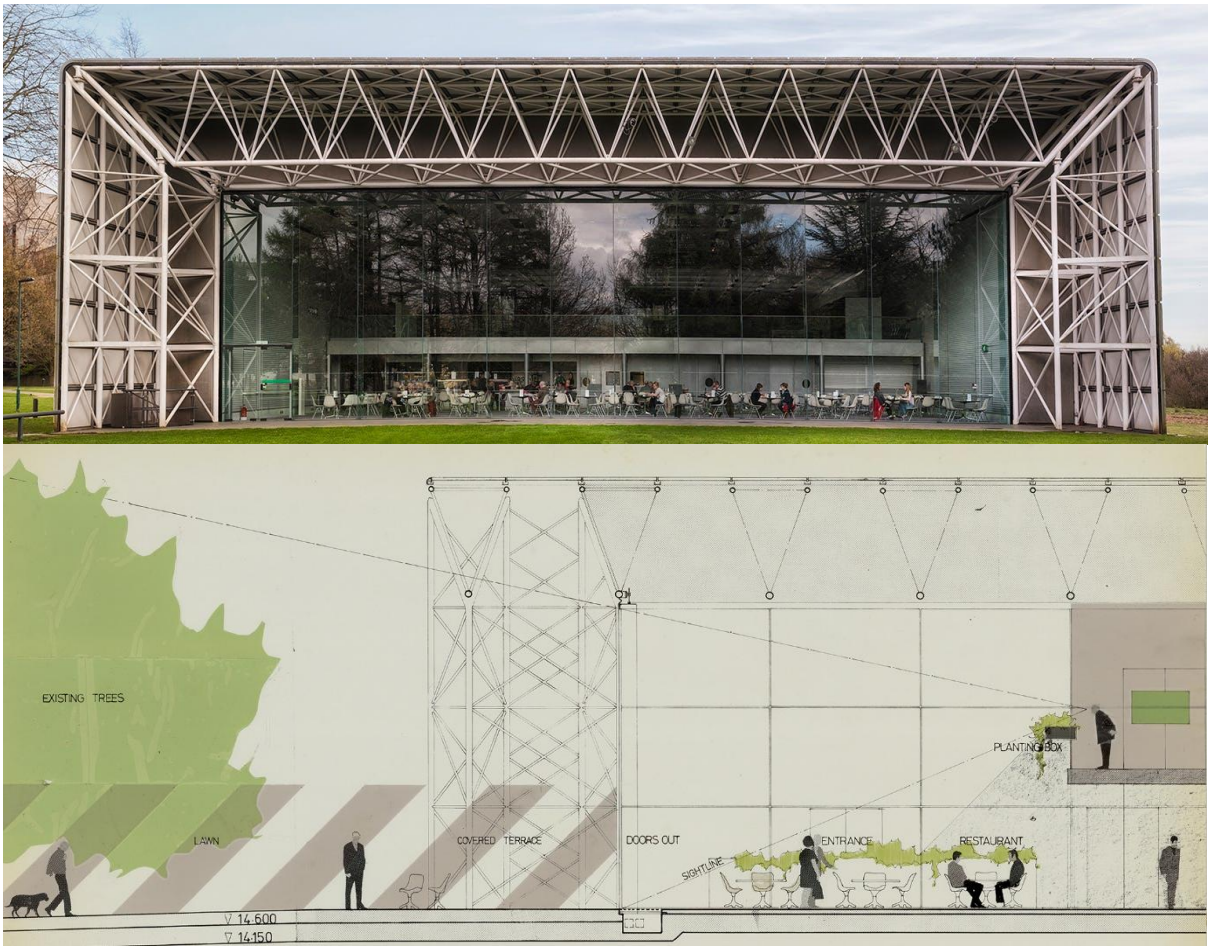

Figure 6: Cafeteria sitting in Sainsbury's art centre
Source: https://portal.uea.ac.uk/documents/6207125/9076228/May+2015-237.jpg/56f603d3-b96e-4b59-b583-c7f60cea8da0?t=1431696937671

The form of the building is rectangular in both plan and section, (one of the main features of modernist architecture is simpler and more rectangular in shape) comprising a single-storey structure over a basement. The columns of this building form the thickness of the walls, and faced on the exterior with simple rectangular panels joint together as the building façade: mainly composite aluminum sheet (Mallgrave and Goodman, 2012) on the two side of the building, but the use of glass for the full height at the two entrance bays on the southwest side of the building, and partially glazed at the curved junction of wall and roof. The glass-paneled areas are pierced by a rectangular arrangement of circular ventilation fans which form a design feature.

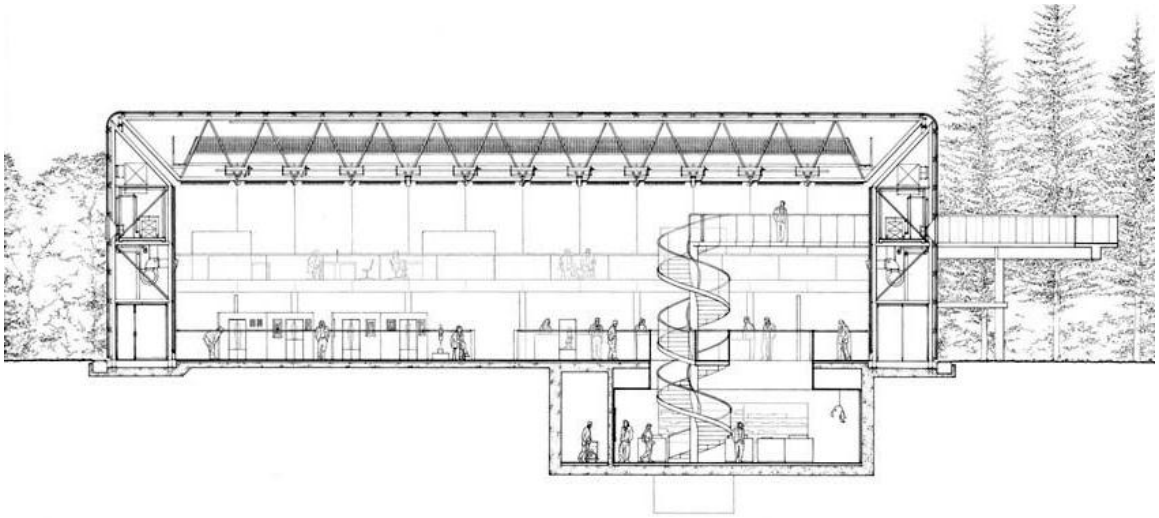

Figure 7: Exterior materials of Sainsbury art centre
Source: **http://c8.alamy.com/comp/K65F5A/exterior-of-the-sainsbury-centre-for-visual-arts-designed-by-norman-K65F5A.jpg**

The exterior aluminum paneling is an indigenous material gotten from the country, advised by the architect Norman foster. The insulated thickness of the walls contains the services, utilities and some storage, while at the end walls are remarkably glazed with a series of innovative, 7.3m high glass panels (which this gives it a modernist architecture), with internal glass fins, sealed with gum. The glazed façade on south-east end compromises a view from the rise of land on which the building sits, down towards the lake, known as the Broad. At each end, the building spreads one bay outside the glazing.

Figure 8: Exterior Materials used
Source: https://www.arch2o.com/wp-content/uploads/2016/01/Arch2O-Sainsbury-Center-for-Visual-Arts-24.jpg

The centre is connected to the Teaching Wall (Listed Grade II) by a raised, ribbon walkway, with glazed sides, which gives access to the north-east side of the Sainsbury Centre at a raised level above the reception area. It delivers visitors to a short internal bridge linking to a metal spiral stair, and thus down to the main floor.

Figure 9: Interior of the main floor
Source: https://www.artfund.org/thumbnail/908/assets/what-to-see/museums-and-galleries/q-s/sainsbury-centre/gallery-interior.jpg

From the inside of Sainsbury art centre, the natural light that comes inside from above, was clarified through four strips of roof-top glazing and is controlled by bands of adaptable blinds at the ceiling level. Light from the walls is controlled by punched louvres at the sides, and blinds (a later addition) at the ends.

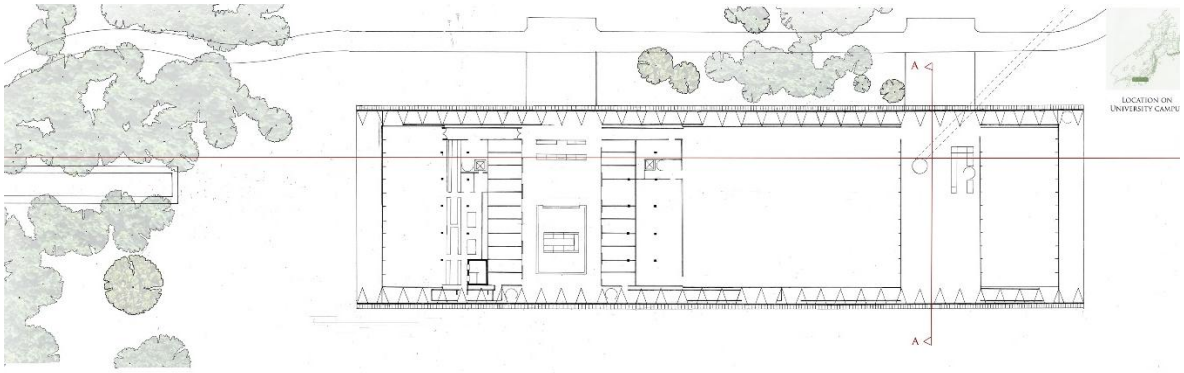

Figure 10: Floor plan of Sainsbury Art Centre
Source: https://en.wikiarquitectura.com/wp-content/uploads/2017/01/Sainsbury_Centre_planta_de_implantaciC3B3n-1024x595.jpg

Norman foster intended the exhibition areas in the building to be flexible, reusable spaces; so the single-span beams (The prismatic-truss hanger spanning 30 × 130 m) and wall housed services are planned to leave the ground floor plan as open as possible (this also features the characteristics of modernist architecture). The floor I the building is divided into six distinctive areas. The south-eastern end forms an exhibition gallery, divided from the central gallery by the reception bay (formed of an entrance lobby on the north-east side, and a café on the south-west).

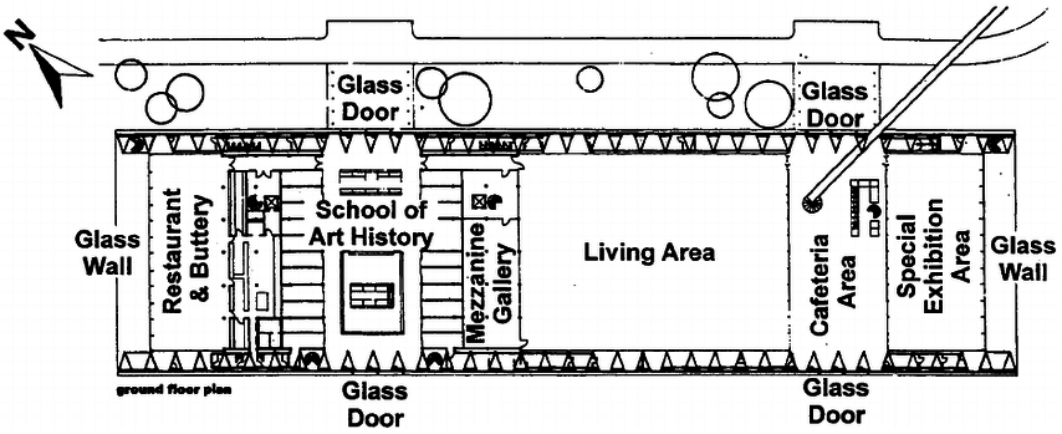

Figure 11: Ground floor plan
Source: https://emilydaisypage.files.wordpress.com/2012/06/plan2.jpg

At the centre is a circular reception desk. The glazed entrance on the north-east side contains two, circular-lobby doorways. Entree to the central exhibition gallery, named as the 'living area', is via a recently situated. In this area, it contains axial and angular, unconnected panels, designed by Norman foster as planes for mounting the artwork gotten from lord and lady Sainsbury. On the north-east side is a glazed entranceway. The two mezzanines form exhibition floors over glazed offices and tutorial rooms beneath and are supported on circular columns sheathed with sheet aluminum, which generally forms the surface finish. The mezzanine levels are reached via metal circular stairs with tubular handrails and glazed panels below (added in 2006), which also give access down to the basement. Access to a restaurant at the north-west end is along the north-east side of the adjacent mezzanine.

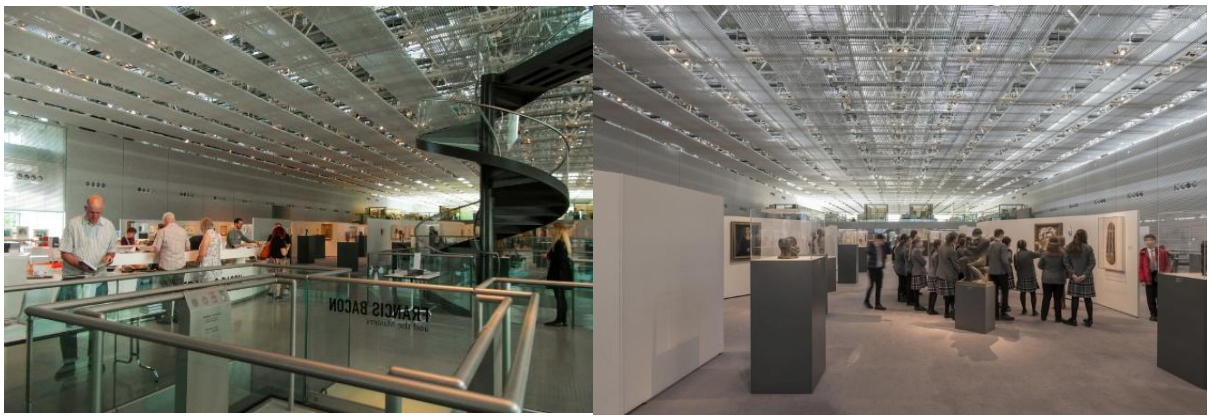

Figure 12: Interior pictures of Sainsbury Art Centre
Source: https://portal.uea.ac.uk/documents/6207125/9076228/May+2015-237.jpg/56f603d3-b96e-4b59-b583-c7f60cea8da0?t=1431696937671

Vehicular access to the basement is via a concrete ramp at the north-west end. The sunken loading bay, grassed on the surface, is screened from the main basement area by folding doors with circular lights. The basement, for workshops in the main, is relatively narrow and runs just off-center down the length of the building. It has a main goods lift and a corridor on the south-west side, which acts also as a cable conduit.

Figure 13: Sainsbury's Art centre basement entrance
Source: https://www.arch2o.com/wp-content/uploads/2016/01/Arch2O-Sainsbury-Center-for-Visual-Arts-23.jpg

Conclusion

In Britain, Modern architecture or modernism movement was promoted by wide group of architects and engineers. Norman Robert Foster is one pioneer architect during this movement practical highlight the Modernism and postmodern architecture in his design and practice. Aside from the fundamental philosophies of Modernist architecture, famously summarized by American architect Louis Sullivan as "*form follows function*," the design and the architectural style has a precise and

identifiable appealing. *The diversified use of cubical and cylindrical shapes informs with flat roofs and the absence of ornamentation create a clean and simplified look related to previous heavily ornamented styles of traditionalism.* As for materials in this style, *the use of metal, glass and exposed concrete* provided Modernist architecture an industrial or practical appearance. A fitting description based on Modernist architecture pioneer Le Corbusier's declaration that a house is *"a machine for living in."* (L. Khan 2013). Stark, neutral colours like white, cream or grey were another mark of Modernist architecture.

During this movement, Architect Norman Foster produce one masterpiece (Sainsbury's Art Centre, Norwich) applying the characteristics of modern and postmodern architecture, and the project is successful.

According to the evaluation done on Norman Foster's Modernism movement in this research paper, the building (Sainsbury's Art Centre) brought a new level of refinement to the practice's early explorations into lightweight architecture and modernism in terms of the following aspect;

1. **Shape;** The shape of Sainsbury Art Centre is cubical in plan section and form. The form is smooth and silky, the structure of the building is also used as beautifully and reviled as an aesthetics: the complete resolution of the flowing surface, the sense of visual inclusion, of togetherness, propriety, good manners are also incorporated in this project. Le Corbusier and Walter Gropius mentioned in an essay "the leading innovators of modern architecture considered it as a volume of space enclosed by light, thin curtain walls and resting on slender piers. The visual aesthetic of modern architecture was largely inspired by the machine and by abstract painting and sculpture". Whereby these characteristics give it a modernist architectural shape.
2. **Materials;** Sainsbury's Art Centre uses metal for it structure, aluminum panel and glass for the building envelope, Which gives it a modern and high-tech architectural outlook.

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