The Aesthetics of the Barcelona Museum of Contemporary Art by Richard Meier

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Abstract

This paper addresses the aesthetics of 'how' a building is designed. Through 2-D and 3-D morphological analysis of the Barcelona Museum of Contemporary Art-BMoCA (1987-1995), this paper aims to show that the aesthetic appreciation of an architectural work goes beyond its physicality to address its abstract logical form. The paper argues that the aesthetics of architectural form is extended to include 'how' design strategies and tactics direct and structure an interaction between formal elements and abstract spatial motifs in the distinctive final form. This proceeds by reconstructing the logic of geometric and formal organization of material form, which generates its formal properties. The museum was chosen because it exemplifies the formal vocabulary and formal logic of Richard Meier, a logic that endures throughout his later career. The paper concludes that through the tracing of 'how' the museum was designed; a deeper aesthetic appreciation of the work emerges. Furthermore, morphological analysis is instrumental to reveal the implicit formal operation strategies; and consequently, to contribute to a deeper understanding of architectural space and the formal principle of its generation.

Keywords: Aesthetics, logical form; constructive morphology; analytic and generative diagrams.

1.   INTRODUCTION

Architectural buildings are a complex system of material structures that configure a system of spaces with a spatial experience stimulated by the previous two systems [1]. The aesthetic appreciation of architecture has hitherto been mainly associated with the corporeality of its form whether in its sensuous perceptual qualities [2], in the emotional response to form e.g. [3], emotional empathy with form e.g. [4], or the imaginative activity associated with form [5] among others. Nevertheless, in most cases, the form of the building is rarely random or accidental; it is rather intentional; it has an underlying structure with specific attributes and relations. [6] argued that the true nature of a thing lies not so much in the thing itself as in the relations between its constituents i.e. its structure. These structures govern the arrangement of its constituents, order them, and give rise to their formal properties. The aesthetics of these structures is the topic of this paper.

Taking the Barcelona Museum of contemporary Art by Richard Meier (1978-1995) as an example, this paper argues that the aesthetic appreciation of buildings goes beyond the sensuous description of them; it is extended to include an understanding of their logical forms in the sense in which [7] uses the term i.e. how it is conceptually structured. The revealing of the logical form of a building entails a "close reading" of it to focus less on the optical and more on the visual to see *"what is not present in the building"* [8]. The manner in which close reading contributes to aesthetic appreciation is along the lines of Scruton's proposition in [5] where he claimed that the aesthetic experience of an object does not depend on its sensible characteristics nor does it depend on the feelings and emotional response to that object; but rather, on the active imagination that gives an overall coherence to that complex object [9].

However, active imagination here is stretched beyond what was suggested by Scruton as seeing a building as something else, or reactive imagination proposed by [10] where one puts himself in the place of another while encountering a work of art; it depends on the Kantian propositions of 'differentiation' and 'appreciation', where one sees beyond the sensible appearance of an object and accesses the principles of its creation and its underlying logic through the application of intelligence. [11] called such reflexive knowledge coming from the intellect's relating several appearances to one as *'experience'*. This reading is supported by [12] proposition that especially the aesthetic form of geometry can be found in Kant's shift from the *Critique of Pure Reason* (1781/1787) to *the Critique of Judgment* (1790). In that transition, an external objective geometric knowledge becomes internalized in the form of aesthetic sense-experiences and aesthetic acts of construction. As such, one can conclude that the aesthetic experience of an object not only resides in its sensible form, but also in its intelligible form, thus including 'how' it came about; its underlying orders, especially geometry and principles. Here, beauty is seen as *"purposiveness without purpose"* in the Kantian sense where the object is seen as having its own inner purpose distinct from being a means to an end, thus acquiring independence from any use by the observer [13].

Although this study is limited to a single case study, its significance lies in what it tells us about architecture itself; it has the ability to explain how the formal properties of a building arise from the relational properties of its constituent parts within an overall structure. Furthermore, by seeing beyond the sensible, we identify universal principles involved

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in the design and their generality invites further analysis and comparison to other buildings. Moreover, seen through the prism of logical form, the physical form produced cannot be judged as good or bad in itself for it does not comply with any subjective interpretation of beauty, style, or taste of the receiver but is expressive of an intellectual formal logic that can be experienced and appreciated [14]. The aesthetic experience of any architectural work, while intimately linked to its visual qualities, becomes a heightening of experience that transcends the visual world to address issues of embedded order and harmony of the intellect residing in the sensible.

This paper is a part of two broader and intertwined research agendas: the first research program addresses design as a cognitive process whereby intentions are formulated in the course of design exploration and it also examines how formal strategies and tactics imposes a sense of order on the development of a specific form from its inception till its completion. The second research agenda concerns studio instructing using precedent analysis as a didactic tool for teaching design. This involves teaching synthesis through analysis. Analysis teaches the students to see beyond physical form. Thus, leading them to firstly understanding the theoretical base of any form, understand its formal language, and later perform subsequent exercises in modifications, extensions, or variations. Further, through morphological analysis of form, that the creative intention behind the designed building can be, at least partially, recovered from the analysis of built form itself.

2. METHODOLOGY

To demonstrate the aesthetics of underlying logical form, this paper examines the Barcelona Museum of contemporary Art (1987-1995) by Richard Meier. Meier was chosen because his architectural practice has a clear set of spatial themes and organizational principles. As one of the New York Five, they has a clear formal language recognized by their structural thinking. Meier, like his fellow Peter Eisenman in his early works, developed his *"structuralist thinking"* based on syntactic structures in order to create abstract geometrical forms [13]. The Museum was chosen not only because of its iconic status but also exemplifies formal qualities and design tactics that makes it penetrable to a systematic and rigorous analysis.

The systematic investigation of form in architecture falls under architectural morphology. Morphology is an "account of form," an account that allows us a rational grasp of the *morphe* by making its internal and external relations intelligible [15]. Both relational and constructive morphology are used to analyze the Museum. Relational Morphology as defined by [16] is synchronic in nature, studies the formal principles that govern the relationship between the parts and the configuration of the whole. Examples of such an approach can be found in [17] where a number of buildings were analyzed according to the morphological attributes such as geometry, structure, and addition and subtraction. Constructive morphology, diachronic in nature, focuses on the form making process of a building in a step by step fashion. It assumes the progression of design from a generic platonic state to a specific architectural state.

The theoretical base for this method of analysis was set by [14] in his thesis *The Formal Basis of Modern Architecture* where he differentiated between a generic form is a Platonic 3-D form in a static, and specific form is an actual physical configuration realized from the platonic form through a series of generative and transformative processes. This is informative when the concern of the research is to show 'how' the form could or has been derived. One the most elaborate examples are the diagrams Peter Eisenman rendered for his early houses [18].

The representational convention to articulate the aspects of design of interest in this research is diagrams. Diagrams as ideograms are used because of their dual nature; an abstraction of reality and a representation of an idea or intellectual structure simultaneously operating as an intermediary between the abstract and the visible [18]. Furthermore, [19] also confirmed that the modern diagram is part of the discursive code that organizes the abstract and the real in order that it may be both visible and usable. Morphological analysis here is based on 3-D axonometric diagrams. 3-D axonometric diagrams are used to present logical forms because it simultaneously renders plan, section, and elevation, thus collapsing the vertical and horizontal, expressing space and allowing the analysis and the object to become congruent [20]. It should be noted, however, that the order in which one explores logical form is not necessarily the same as the order in which the building was actually thought of and/or constructed; rather it is a *post hoc* rationalization that facilitates the understanding of the generation process [21].

The complexity of the design understudy can be decomposed into a set of structural diagrams that explain the underlying organizing themes in a progressive manner. This shift from the corporeal to the abstract diagrammatic represents a move away from a concern with the perceptual-aesthetic qualities of the object toward the conceptual relationships that underlie and make particular formal arrangement [20].

3. ARCHITECTURE AND AESTHETICS

For most architectural theories, a building is basically a practical and functional artifact, whereas architecture brings artistic obsession over and above the respect for the practical and functional aspects [22]. [23] in the opening paragraph of his *Outline to European Architecture* stated the distinction between architecture and mere building is carried out through aesthetics where the term architecture applies only to buildings designed with a view to aesthetic appeal. For [24] *"a building can only be raised to the status of architecture through the additional fulfillment of aesthetic requirements"*. Thus, both distinguished writers assumed that the status of architecture can be reached through the addition of an aesthetic appeal to the building. Nevertheless, the aesthetics of architecture is not easy to address; does the aesthetics of architecture arise from only the formal properties of the material or the visual or does it arise from the overall properties specified by a set of formal relations and parameters? Further, the term Aesthetics, derived from the ancient Greek *aisthanesthai* meaning to sense or to perceive, has a dynamic and complex set of relationships: it is related to sensory perception; feelings aroused by perception; the form or design of a thing; and the acuity of subjective judgment

associated with perception [25].

Of interest to this paper are the issues of the design of a form and the judgment of its aesthetic appeal. Thus, one here must make a distinction between aesthetic value and aesthetic judgement. For [26] aesthetic pleasure arises from sensation of the physical, but judging something to be aesthetically pleasing requires the involvement of reflective contemplation i.e. engaging the agency of the intellect to grasp intelligible. The emotions resulting for aesthetic judgment were addressed by [27] where he tried to formulate a complete theory of visual arts. For Bell, the *"aesthetic emotion"* of any object-he was talking about all forms of art-depends on the object's *"significant form"*. He defined as a particular arrangement of elements/forms combined according to certain unknown and mysterious laws that *"do move us in a particular way, and that it is the business of an artist so to combine and arrange them that they shall move us"* (sited in [28]). In that sense, judgments of aesthetics are sensory, emotional and intellectual all at once, thus relating to a "what" and a "how".

Following the above mentioned argument and accepting [29] notion (1970) that any form is not an aggregation of its elements; rather, it is an integrated whole whose constituent elements are governed by a structure according to intrinsic laws which determine its nature, the aesthetic appreciation of any form is extended beyond its sensory properties to include the way it is structured and how its constituent elements are related to each other.

4. ARCHITECTURE AND LOGICAL FORM.

Up until the 19th century, form was equated with a description of the sensory properties of the formal attributes of buildings [30]. Nevertheless, form has also been equated with cognitive, conceptual, and affective properties also [31]. These properties give form structural order; thus each form has an internal logic. The concept of logical form was coined by [7]. Langer noted that in order to understand the different forms and relate them to each other, one needs to not to know of things in the most direct and sensuous way, but rather know *about* things. This requires an understanding of their logical structure. For Langer, *'logical structure'* is that basic design or inner organization of something that may be carried out in a number of ways. It involves knowing what sort of things they are; how they are made up; and what their internal relations are. Langer further asserted that in order to know *about* a thing, one must know the particular form it is taking in a particular case. Thus, Langer stretched the notion of *'form'* beyond the common connotation of physical *'shape'*. In her definition, anything can be said to have a form if it follows a pattern of any sort, exhibits order, and internal connection. To distinguish the abstract principles of form that belong to the intellect from shape or physical form that belongs to the sensible, Langer coined the term *'logical form'*. Langer's definition of logical form corresponds to Aristotle's *'substantial'* form meaning that which structures and governs the changes of matter in order to make a thing what it is [32]. Thus, logical form as substantial form is the source of the order, unity, and identity of objects. Nevertheless, one should note that logical form does not explain 'why' an object is; rather 'how' an object came to be.

Consequently, the *logical form* of a thing is the way that thing is constructed, the way it is put together or structured conceptually. Thus, a building has a logical form when it has an underlying structure that organizes its constituent elements and their relationships. Nevertheless, 'structure' is not only associated with the material construction of something, but more importantly, with how it was structured and put together conceptually i.e. its underlying system of ordering. In other words, the structure of a building is *"the schema that provides the underlying order and structure for an aspect of an architectural design."* [33].

In order to elaborate more on the relationship between logical form and architecture, we refer to [34]. [34] draws the analogy with language. In architectural design, buildings are like words in language i.e. ideas one thinks of, while 'how' designers realize their buildings, in terms of rules and principles, into a built form or a representation of it are ideas one thinks with i.e. the syntactic and semantic rules which govern 'how' one deploys words to create meaning. Hillier asserted that the underlying configurational 'ideas-to-think-with' give order and purpose to buildings. He further draws on the concept of *'architectural competence'* to refer to the 'ideas-to think-with' or 'how' designs are carried out. 'Architectural competence' is a concept that Glassie borrowed from Noam Chomsky's study of language. Architectural competence refers to *"a set of technological, geometrical and manipulative skills relating form to use, which constitute an account … how a house was though of…"* [34]. This set of skills is referred to by [35] as an instrumental set. [35] refers to the instrumental set as conventions, rules of thumb, and operational procedures through which designers conduct their design operations in order to foresee the final design product before its construction. Thus, the designer thinks of a design problem but thinks with the instrumental set.

Accordingly, buildings can be described as a set of design elements, either elementary or combined into components, placed in deliberate geometrical relationships i.e. they have an underlying formal logic, that are governed by compositional principles. Thus, an architectural work has a logical form if its material form is ordered by an instrumental set manifested intellectually in the spatial and formal configurations of the building. Architectural form then echoes [36] *'What makes me tick is an aesthetic sense of order, of essential simplicity behind apparent complexity. As an artist, it is possible to create exuberant and unique objects from a small and limited set of elements and rules; as a scientist, it is a challenge to discover a simple explanation for complex behavior, a general causal structure for a series of related but unique events. In this view, science and art are both aesthetic activities: only the direction of the approach differs.'*
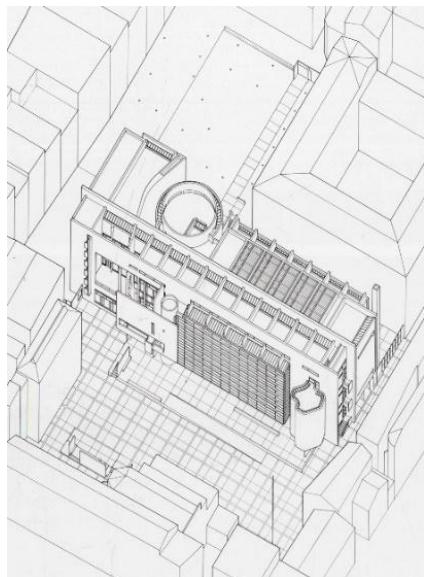
5. CASE STUDY: BARCELONA MUSEUM OF CONTEMPORARY ART, BMoCA

The Barcelona Museum of Contemporary Art is located within Casa de la Caritat, in El Raval, an old Gothic quarter in Barcelona, Spain. Richard Meier was commissioned to design the museum (1987-1995). His mission was to construct a rigorous dialogue between the historic urban fabric and the
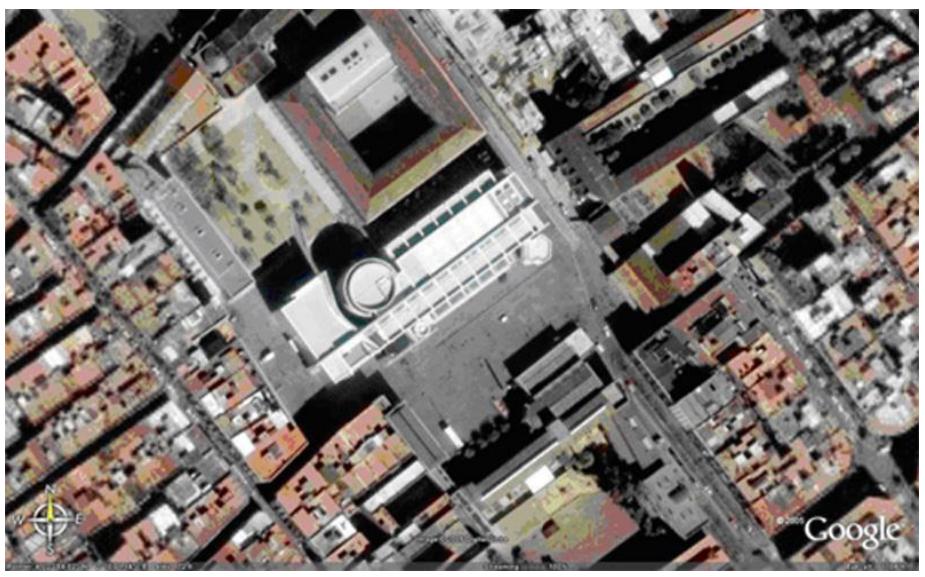
contemporary art; Meier's white architecture clearly exemplifies the formal qualities of late modernism architecture and closest to the aesthetics of Le Corbusier in terms of formal reinterpretation, rationalism, and aesthetics.

The museum was conceived as a white rectilinear mass standing in contrast with the historic surrounding (fig 1: A isometric, B google image aerial view) The main entry is located off-center near the pedestrian passageway i.e. Paseo which connects the *Plaça dels Angels* in front of the museum to the garden behind the museum. The *Paseo* cuts through the main body of the building dividing it into two wings with the entrance rotunda to the east wing. The two wings are re-joined by a datum wall that runs along the whole length of the

building. The southern facade is animated by a cut-out hovering plane above the entrance, a three-sided glass box of the ramp-hall and a free-form top-lit 'special exhibitions' gallery set at the eastern end of the façade (fig 2). The northern façade of the museum stands in contrast to the southern façade; instead of reading the elevation as the manipulation of a series of planar screens and elements, the southern façade is read as a defenestrated plane with patterned openings clearly shows the two wings of the museum building as well as the entrance rotunda in-between (figure 3). The building exterior is clad with white enameled Aluminum panels while the other geometric additions: planar elements, cylinders and the free-form are finished in white concrete.

(A)

(B)

Figure 1: A Isometric of BMoCA (source Richard Meier's Office), B google earth Aerial image)

Figure 2: External treatment of the main facade of the museum (Source: Author)
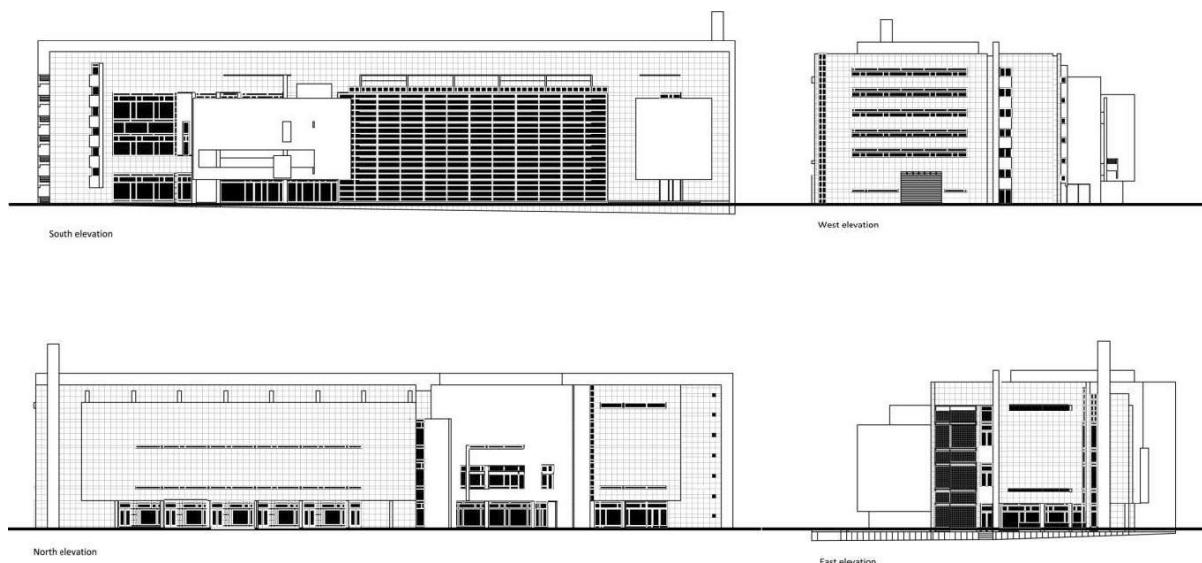
Figure 3: Museum elevations (source: Richard Meier's office)

Programmatically, the building is divided into two wings; a western wing containing administrative spaces and special galleries, and an eastern wing with the entrance rotunda and the main exhibition spaces (fig 4). The western wing, contains a shop, a loading area and a café in the ground level, while office space occupies the rest of the floors with a research library and an educational center. The eastern wing, contains the main exhibition spaces distributed over three levels. From west to east, Meier arranged the functions progressively from the most private to the most public uses.
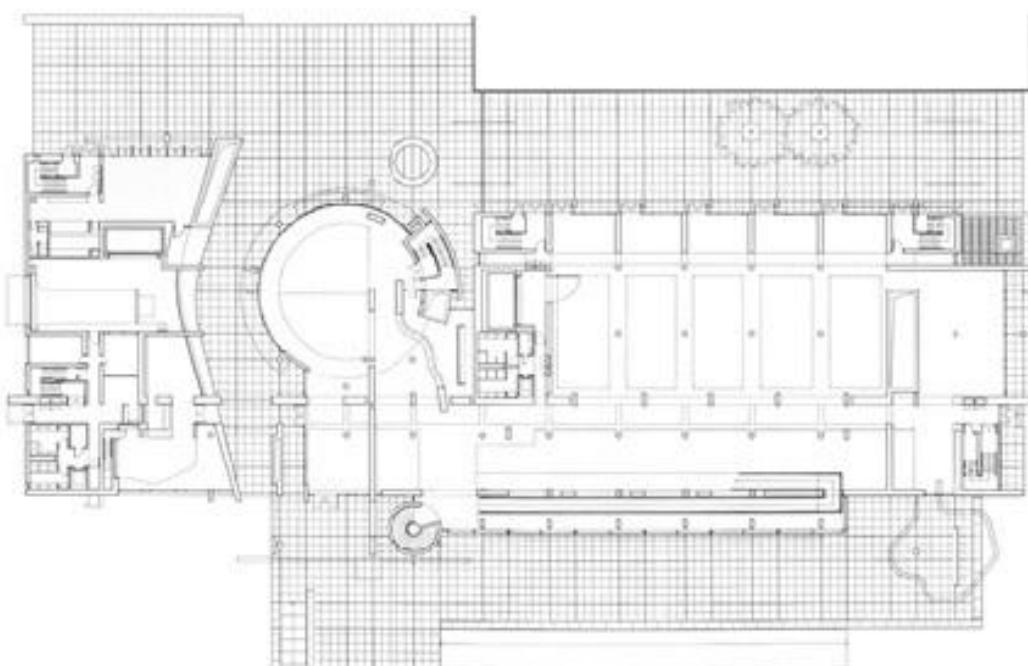

Figure 4: Ground floor plan (Source: Richard Meier's Office)

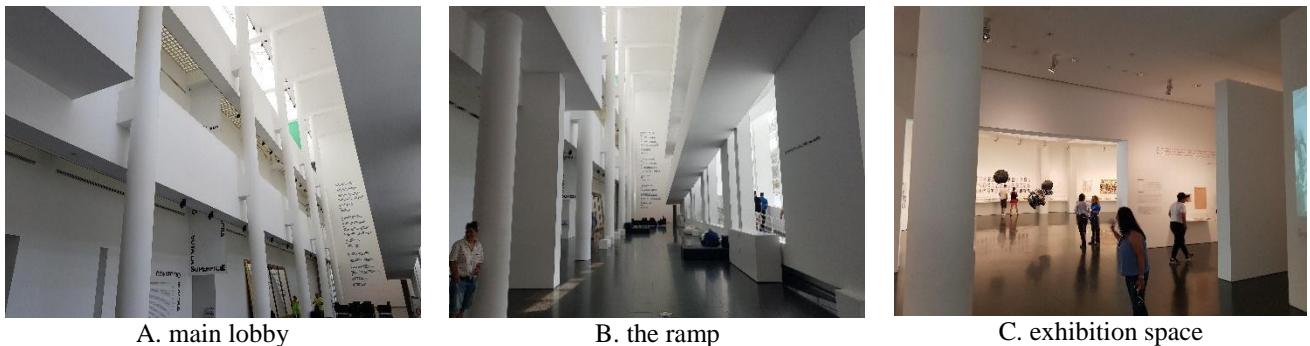A. main lobby   B. the ramp   C. exhibition space

Figure 5: The inside of the museum (Source: Author)

Through the Paseo visitors reach the cylindrical lobby of the reception. From there, they can go to a triple-height atrium. This triple height atrium-like hall that unfolds along the front façade of the building contains the main ramp linking the three floors of exhibition space within the eastern wing of the museum. The ramp-hall provides a public space of interaction where the boundaries between the closed galleries inside and the city outside are blurred (figure 5).

6.   IDENTIFICATION OF THE LOGICAL FORM OF THE MUSEUM

The study the logical form of the museum entails the identification of the generic form, basic constituent elements, probing their structural relationships, and possible combinatorial operations in order to understand how they form an integral entity. The identification of a generic form is important because it acts as a scaffold where its intrinsic properties e.g. regulating lines of axis and symmetry, act as a possible point of reference to structure the relationships between potential elements and the spatial division and physical massing of the design [37].

The generic antecedent form of the museum is a platonic rectilinear block with a base of 120 x 400 feet and a height of 77 feet. The block of the museum is not left in its platonic state; it was animated through *subtraction* and *collagist juxtaposition'* of forms or parts of forms against or through the main block of the museum: Meier subtracted a mass to introduce the entrance rotunda and create the passage way, he further added a plane in front of the subtraction, a glazed rectilinear mass housing the main ramp, and a piano like form on the front facing the plaza. Meier reconnected the two masses of the museum by the insertion of a datum wall along the longitudinal axis of the

composition. He further added a wall along the transverse axis block splitting the cylinder and creating a syntactical center-one of Meier's formal language themes. Innately, Meier created a figure comprised of platonic forms juxtaposed in asymmetrical but balanced composition and animated by the use of the basic architectural elements such as the point, line, plane, and mass. The interplay of the additions realizes a gestalt figure-ground theme in the overall composition both in 2-D and 3-D (fig 6).

On the inside, Meier stratified the inner volume of the larger mass into three levels using two horizontal planes. He further utilized the longitudinal datum wall to split the volume vertically into two major zones: an expansive open zone with a set of smaller cellular spaces and a triple volume zone created through subtracting parts of the slabs [38]. Accordingly, Meier organized volumetric cells linearly and inserted the main circulation corridor along the datum wall. The corridor acts as a transitional zone accentuating the linearity of the configuration. Meier's linear configuration is clearly expressed through the planar geometry that defines the plan composition {fig 7).

The openness of the triple volume inside is animated by the ramp and the structural columns, the horizontal planes, which appear to be suspended within the orthogonal volume, and the walls that define and delimit space. Through the animation of the inside volume by the interplay of columns, walls and knee walls, and horizontal planes, Meier provides a dynamic but balanced contrast between verticals and horizontals, thus creating a sense of *'purist'* equilibrium within a cubic volume (fig 8). As such, these architectonic elements acquire a double condition; a structural role and an architectural role in articulation and animation. Accordingly, they become regulating elements that intellectually structure space and guide form organization.
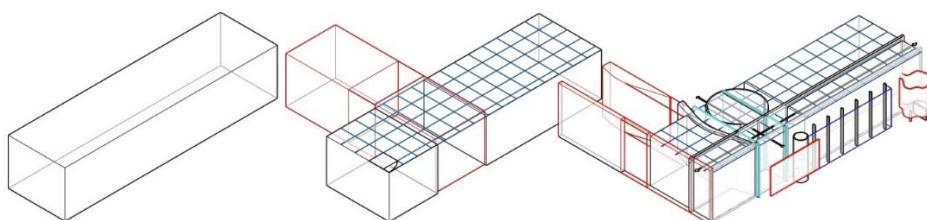

Figure 6: Sequence from the generic, the subtraction, and then the addition of the elements
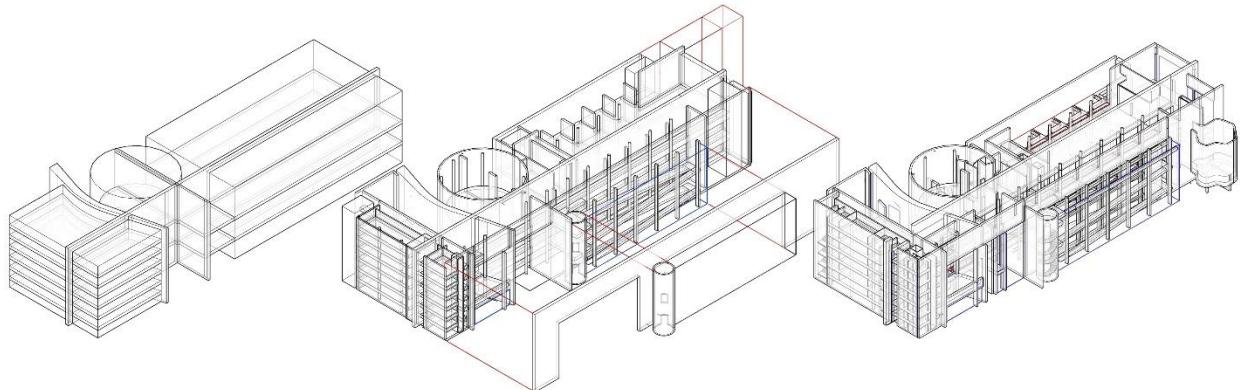
Figure 7: The animation of the internal volume of the museum (Source Author)

Figure 8: The interplay between the architectonic elements on the inside to create a purist equilibrium

Furthermore, the functional zones of the inner space are translated to visual layers in the surface structure by using planar elements and extending the circulation spines to the outside as balconies. Consequently, the generic form is dually conceived either as a solid mass or as a series of planes juxtaposed together forming a 'thick and layered bar'. These layers are marked by the most basic architectural elements of columns and walls (fig 9). The overall layering is further accentuated through the emphasis on the circulation corridor running across the longitudinal datum wall and the introduction of the 90°-degree transverse secondary axis allocating an entrance rotunda. The dialect between the mass and the layers recalls Le Corbusier's notion of *mass-surface* in which a sense of ambiguity is created in the figure-ground relationship; form can either be read as either 'mass', or solid that has been cut away or 'surface', that has been built up by an addition of a number of layers or planes [14].
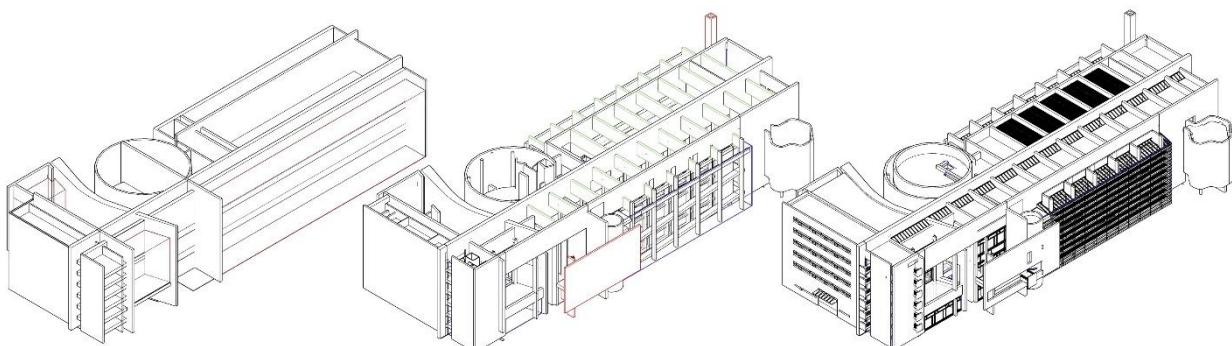

Figure 9: The dual treatment of the museum between the solid and layered (Source author)

As for the geometry of the design, the overall dimension of the rectilinear block is based on the ideal geometry of three juxtaposed squares of **125ft x 125ft** giving it the total ratio of **1:3** (fig 10). Meier used a Cartesian grid of **3ft x 3ft** module as a basic module to regulate the plan. The **3ft x 3ft** is the base for the **24ft x 24ft** structural module marking the circular columns and another module that shifted by **9ft** from the structural module marking the rectangular columns and the transverse wall (fig 11). The circle is the located on the edge of the second square. The longitudinal datum wall is registered on centerline **D**. Centerlines **C** and **D** are used as a base to allocate the transverse wall and the center of the rotunda using **1:√2** ratio. The edge of the museum does not fall on the logical sequence of the centerlines i.e. centerline F. Nevertheless, its allocation is not random; it is determined by a **1:√2** ratio from centerline **D**. Thus, the overall configuration of the generic and specific form of the museum is not random; the block is highly disciplined by an ideal geometric matrix. The allocation of walls, columns, subdivisions and additions, and the overall massing is disciplined and regulated through Meier's use of modules and proportional systems such as the golden section and the **1: √2** ratio (fig 12).
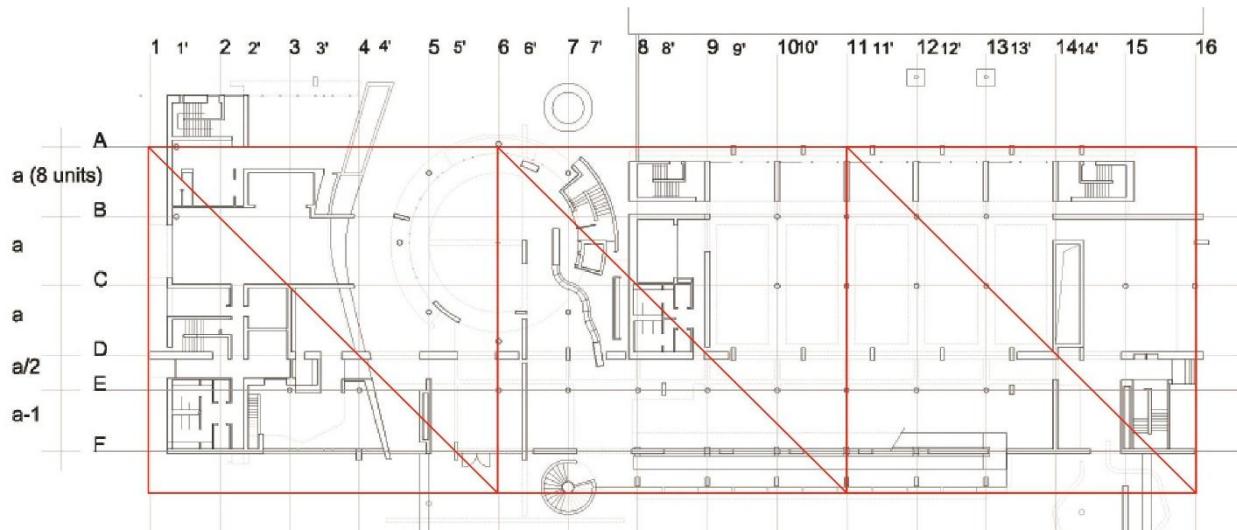

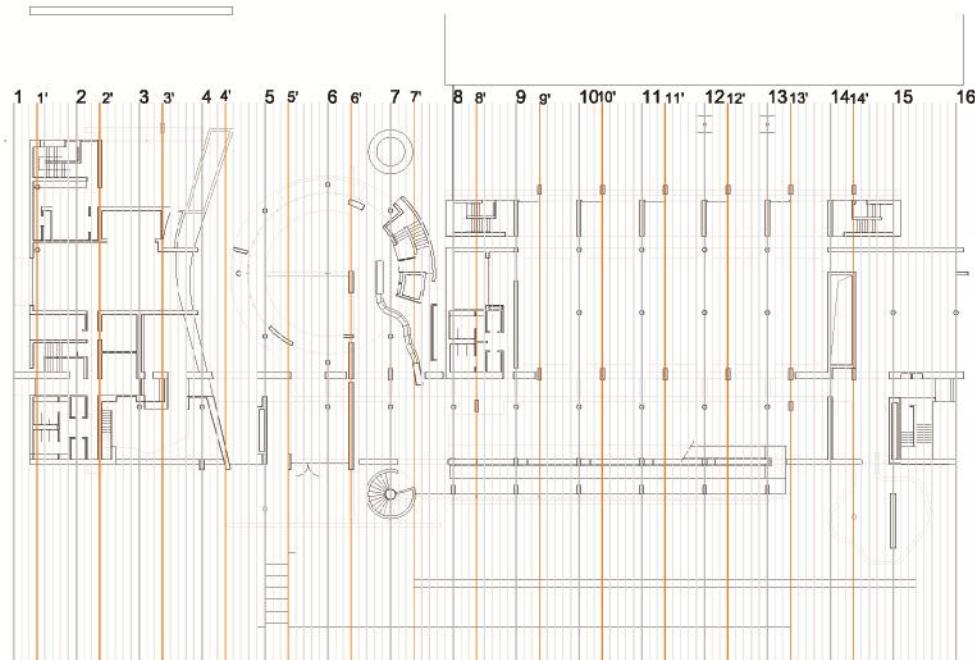**Figure 10:** The basic geometry of the plan of the museum

Figure 11: The basic module underlying the structural module of 24ft and the shifted module
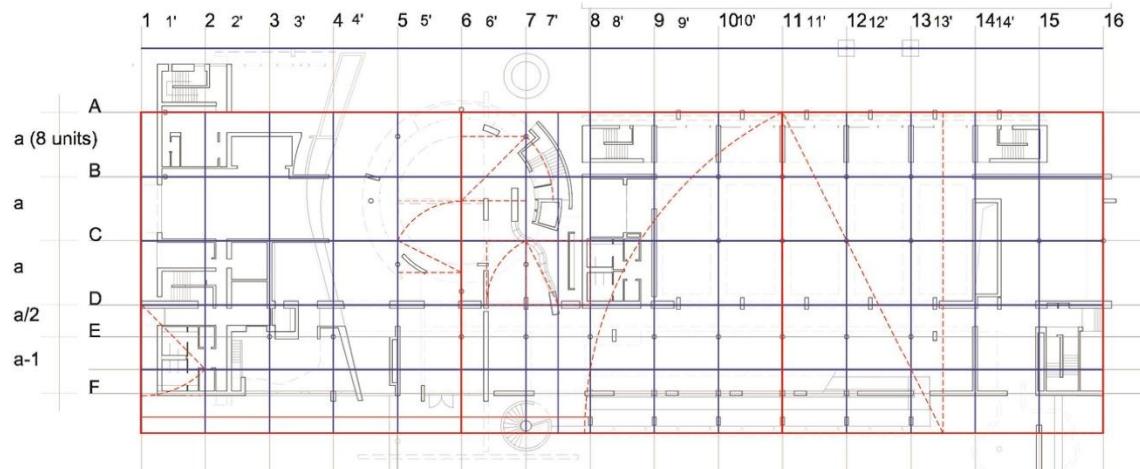
Figure 12: The overall ideal geometry regulating the overall design of teh museum

The analysis showed that one of the most important aspects of the formal language of Meier, besides the obvious perceptual aspects of the building, is the regulation and structuring of the layout and facades of the museum through modularity via using grids, proportion, and layering in both the literal and abstract sense. As noted from the analysis above, the specific form of the museum can be read as interplay between a figure i.e. the articulated generic form with the additional forms juxtaposed together and their spatial animation, a design field i.e. the gridded matrix with the regulating lines and proportional systems and the interaction between the previous two. As such, the logical form of the museum can be thought of as a three-dimensional architectural device that provides the conditions for ordering the volumetric entity. This geometrical conditioning controls the overall dimensioning of the rectilinear form, marks the allocation of all structural grid/s, walls, and animated forms, and regulates strategies of addition and subtraction both locally in relation to each other and globally in relation to the overall form. Thereafter, the aesthetics of the museum can be read not in the final form, rather, in the interplay between architectonic regulated by a formal logic.

7.   CONCLUSIONS

As importance, in this paper, is shifted from describing the physicality of the Barcelona Museum of Contemporary Art to understanding its logical form, we can conclude that a large part of its aesthetics appreciation lies in it being less of a traditional dwelling and more of an abstract idea of '*how'* a building might be rethought of from first principles and elements; its form is of basic elements of architecture i.e. the column, the plane, mass, and volume configured together within a logical formal system.

This paper suggested that the aesthetics of exemplary building, such as the BMoCA, do not only lie in their tangible and sensory attributes, it is also demonstrated in '*how'* buildings came to be in its conceptuality. This '*how'* is ordered by logical form that operates simultaneously between the abstract and the real capturing the conceptual essence of the architectural work

and guiding its physical manipulation. This aesthetic reading of architecture is only possible through a 'close reading' where the intellect is activated to distil the abstract from the concrete and reconstruct it both logically and constructively. Furthermore, as can be seen from the formal analysis of BMoCA, the manipulation of the logical form not only skillfully articulates the corporeal form and satisfies normative criteria of order, but also brings in deeper thought and theory and renders what is non-discursive discursive resulting in architecture that involves critical thinking and reflection rather than mere application of knowledge.

When we come to comprehend the logical form of one work of architecture, we also come to understand the form of a larger class of buildings that can be generated following similar design principles. The appreciation of logical form helps us to link the particular to a sense of creativity and potentiality, to the structure of what is possible.

The importance of studying logical form and presenting it constructively is multi-facet: when the conceptual essence of a building is visually manifested, a better understanding of the formal ordering and organization of building is possible, accordingly, it can be opened up for discussion and theoretical debate. Additionally, this type of morphological analysis describes an architectural work at different stages of its generation, thus, establishing links to the design process that are not immediately available to the viewer, accordingly a better understanding of the design process can be achieved. Moreover, understanding the underlying design principles and order clarifies what the designer brought to the design task that was not required by the program or dictated by the site. Furthermore, these formal systems as the ones presented earlier can be used for the systematic description, interpretation, and evaluation of existing works of architecture and further can be used for the generation. This can serve as a basis for communication, whether between teacher and pupil, architect and client, or critic and public.

Finally, addressing design constructively as shown earlier is not widely used in architectural education; but one might speculate that they can be used in design studios as strategies to manage

the design process. The conscious use of design strategies can structure the design process especially in the early years and provide a quasi-rational base for the development of an architectural work. Although, it is debatable whether design can be taught, the capacity of 'doing' design can be greatly developed by reconstructing precedents.

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