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Review Article

A Review on Main Parameters of Composition for Artistic and Harmonic Solution in Architectural Design of Partial Forms

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Abstract:

Architectural design is one of the most comprehensive and composite latitude, in the present age architects are able to design and adapt various objects and have different features to suit different needs.; adequate selection of form, texture appearance and selection of color for architectural objects is one of the most essentials part of client's expectations in architectural projects, architects are responsible for different issues in designing process of buildings and non-building structures, one of them could be balanced solution and creation of attractive and harmonic adjustment of spaces, forms and elements in the interior or exterior of the objects, the objective of this study is to describe and introduce the artistic aspect of architectural design which could address many issues related to composition of architectural design, arising from the introducing of composition, definition of composition criteria and its general principles, consequently, architectural composition has the potential role as an assistive tool in development of conceptual and purposeful design process during the solution of other architectural problems. This research will help the architects and designers to improve their artificial ideas how to compose and orient architectural forms and create artificial facades.

Keywords: Architectural Composition, Appearance, Form Selection, Visual Attributes

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1. Introduction

In the field of architectural design, two issues are very important: first, attention to the analysis of scientific and technical issues, the second one is reflection of art and creativity in visualization of architectural objects. Scientific and technical issues which form the basis of this field, such as strength, stability, resilience, functional requirements, climate and demographic issues in the period of design have been on the attention of scientists and experts who has studied the above issues in a comprehensive manner. The second part of architecture which is discussed in this article is related to the reflection of art and creativity which provides the artistic dimension, creativity and beauty in architectural projects. The objective of this research is to use an artistic and balanced combination in designing of architectural forms, motivating art in architectural projects and promoting it in practices.

2. Methodology

This research has been prepared using observational research method and reviewing previous sources, research is based on a review of the literature, the opinions of experts, empirical and practical cases, in collection of contents availed from reliable and credible references by citing the address and respecting the copyright, experiences of architects, urban planners, mathematical and geometrical issues which create order, arranged desirable composition in architectural works has been used. The aim of this article is to develop the artistic concept and attractive solution for architectural projects during the design process and open a thinking development and creation window for students and participants of architectural design. This paper will help the students and designers to improve their artificial ideas how to compose and oriented architectural forms and elevations.

3. Literature review

Throughout the history of art and architecture, the composition and organization of spaces and forms has been defined in various forms and has undergone developmental stages which has resulted in different styles and schools of architecture, even it led to critiques of theory and history of architecture. On the other hand, architecture activities are carried out for the material and spiritual well-being of human beings.

The composition has had different definitions over its period of time. Alberti stated composition as “the procedure in painting whereby the parts are composed together in the picture” [1] . In architecture and design, Gaudet described composition as “the combination of parts in a coherent whole” [2] . From this point of view, an artistic and appropriate combination requires logical features, in addition to some important features, the basic feature and the ultimate goal of the combination is to achieve unity and harmony. [2] . Alberti describes “parts of a ‘historia’ [painting] are the bodies, parts of the bodies are member, and part of member is the surface” [3] . In an architectural plan as a composition, the rooms would be its elements; and for a building facade, the windows, railings, roofs and

symbolic forms and figures are their composition elements [4] ; what to consider as a composition describes a proper list of its parts. From another perspective, some theorists concern the semantic aspect of composition; they usually concern the perception of a composition and focus more on content and artistic communication by visual elements [5]. Accordingly, the trace of sign and symbols come out in a composition [5], rather than the arrangement and unification of the physical elements. This paper, without concerning the semantic aspects of composition, concerns the syntactic aspect of composition focusing on the physical elements and their attributes.

3.1 Determining the basic principles of composition

At first, human beings have to learn the alphabet to be able to form the words and develop their vocabulary, they must understand the rules of grammar before making sentences or to write an article, introduction to architecture means to understand the basic rules of creating form, space and arrangement of its components, how the relationship between form and space is so that these elements can be used during the design of each architecture work. The purpose of architectural composition is to create rhythmic forms and shapes with the help of different architectural methods of composition, the first issue which raises in the architecture sketch is the composition, because it will be a correct and logical sketch when the constituent elements are combined in a desirable way, for instance, the architectural form of a building should answer technical, scientific and artistic issues and should have positive effects on the mental state of human beings.

The following main steps are considered the most essential parts while creating the artistic and conceptual architecture composition in objects:

3.1.1 Determining the Form

The boundary between space and mass is form, in selection of architectural forms, various elements such as sub-forms, materials, textures, colors and other elements combined to create the spatial form of architecture objects and give then the spirit as well. The quality of architectural forms in general meets all the expectations of this art which defines the relationship between human and architecture. The choice of form and its related parts or elements are considered to be the first step of creating architectural composition, which causes variety and beauty both in the plan and in the spatial form of architectural objects. The form or spatial body of the object is determined based on the following specifications;

Functional expectations: That shows the purpose of the building or the reason for its creation. The external appearance and spaces plays an important role in determining the purpose and the function of the object [6]. Architects are those who create a physical or artificial environment and create work environments for human activities with all its material and spiritual values in mind. The task or purpose for

which the buildings are built is the basic starting point for the architects at the top of the building plan.

Since an employee has no responsibility to create his own work environment, before the employee or homeowner enters the work environment or residential area, this environment is designed by the architects and then built and adapted. Therefore, the architect must organize and combine all the functional necessities of the environment in a scientific and comprehensive way. In addition, the repair form in the orthogonal and three-dimensional view should represent the house task in order to create the ground for addressing and recognizing the house in the city.

Traditional requirements: Some buildings are under the special influence of traditional and cultural conditions that prevail in societies and the choice of its spatial form is limited to the same way of thinking and ideology, such influences last for many years, even when it comes time as History of art and architecture is used.

Based on personal interest: Despite all the limitations, architects must be proactive in choosing independent building forms in order to show their creativity and art in coordination with the above-mentioned issues. This way of designing facades and forms provides the ground for improvement, well-being and beauty in a developed way and in accordance with the demands of the age and inspiration from nature. If a building is designed in the proper spirit, personal characteristics such as grace, dignity and vitality can be expressed as an integral part of the structure [7].

3.1.2 Determining the Facades

The texture or appearance of the exterior surfaces of the structure could cause certain variety and beauty which could change from a polished state to smooth state and from smooth state to polished state, make it possible to use different elements, building materials and synthetic materials, all elements in the facade determine the appearance of the structure such as the shape and replacement of clamps, functional and symbolic elements such as peaks, grid sunshades windows, glass, wood, etc. The expression of building depends upon composition of plan and architectural design of the structure [8].

3.1.3 Determining the Color in the External Surface of the Structure

Color creates beauty both inside and outside of the buildings, after determining the form and external surfaces of the building, the final method to create beauty is the choice of color. There are a number of important issues involved in color selection which are discussed below [9].

Functional characteristics of the structure and psychological effects: Color has direct effects on mental state and affects human's senses, therefore, in accordance with human's performances in the artificial environment both inside and outside of the structure should be determined with the desired color. From the aspect of

psychology, each color has its own meaning and recognition. Therefore, structures which perform the same functions, there are many similarities in their colors as well.

Match the area and locations: One of the other factors which determine the external color of the structure is to pay attention to the surrounding building and the environment, the color should be determined opposite to the environment where the building is located. For instance, if the structure is placed inside green area, white or yellow color should be used for outside facade so that it could be able to create good harmony with the environment and special beauty as well.

Taste and aesthetics: In accordance with the above two characteristics, the third method to choose color is the art of the architect and designers who create thematic beauties with the using of various colors and color properties such as color shade, color value and color tone [10].

Table 1. Showing Use of Color in Architectural Design

	
Use of white color for the structure facade in accordance with the green area	Using a variety of colors to create a beautiful repair look

4. Partial form development and complation methods

The concept of composition as it is used for buildings and design in general, is to adjust and combine parts, for instance: face composition, plans, details and symbolic elements and with the correct use of these factors the design becomes more beautiful and dynamic. Regarding the definition of composition, composition elements are assembled or organized to form a composed object, known as a unified object. That is, a unified object (a composition) contains various elements (parts) connected together, each can be allocated to a different layer of composition. The most common of them are listed below;

4.1. Harmony: Placing of parts in a space next to each other in a way which is in harmony with the subject and the same style of aesthetics, although they are not the same sill gives a feeling of related to each other, is harmony. Harmony can be expressed between subjected building and site, subjected building and surrounding structures and between different parts and elements of the same building [11]. Thus, harmony includes the design and composition of elements that have common features, from the other hand, if the creation of harmony is without diversity, it

becomes monotony. Intensely repetitive variety in texture, color, shape and form is one of the easiest ways to achieve harmony [12] . When designing architectural projects, understanding the creation of unity and harmony is very important, which means that harmony and unity should not be considered as non-diversity and non-contrast, but harmony should be created from a combination of diversity and differences, which should be artistic and creative, for instance, if details of the composition elements done differently, in a different way and the function is related to the single law of composition, it must show a harmony and unity.

Table 2. Showing harmony in architectural design through different methods.

 Expression of harmony through Rhythm and Repetition in john Curtin school of medical research building. Lyons Architecture in Australian University	 Harmony by –composition Texture Geometry direction and proportion in historical Greece temple “Parthenon”
 The Lotus Temple, located in Delhi, India, harmony is expressed by repetition of elements, color, texture, shape and form.	 Falling Waters- Frank Lloyd Wright Reflects the harmony between the site and the built form.

4.2. Contrast: Contrast means opposite and contradiction to get out of monotony, the majority of phenomena are understood by the opposite and contrast, as a result we can say that two opposite things complete each other, white always stands out better next to or in the middle of black.

In architecture, general difference or contrast in certain cases to create variety excitement, interest and beauty, the architectural elements and forms appear more prominent and beautiful to be in their opposite neighborhood. Contrast can be provided through size, shape, color, position and direction in architectural elements and forms. [13]. Making a difference in the architectural works of the time involves an artistic state which can be done in a balanced and proportionate way, otherwise the difference and contrast will not make any difference in the visualization.

Table 3. Showing contrast in architectural design through different method

		
In above building contrast appears in color, texture and form.	the middle space of building is truncated cylinder above the cubic space of building and Deformation in spatial form, shape and color show the contrast	In the above building, the contrast in terms of density and space and also in terms of positive and negative spaces has been shown.

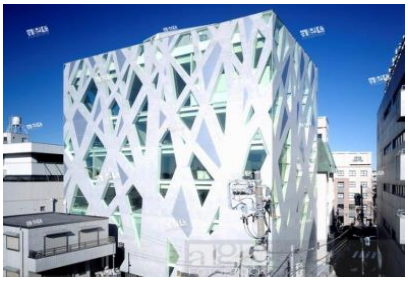
4.3. The balance: balance is a state in which the viewer's sense of a composition is stable and all its visual forces have equal power. Balance and Equilibrium can be represented by symmetrical, asymmetrical, , or corresponding and radial state of composition [14]. The emergence of balance in architectural works paves the way for general harmony, this feature can be used in details and different parts of architectural forms and elements, for example in the interior and exterior painting of architectural works if using this feature will make the audience happy.

Table 4. Showing balance in architectural design

		
Symmetrical Balance: The above building, which is one of the world architectural masterpieces, its plan is according to a corresponding axis, and therefore its spatial form is perfectly balanced.	Asymmetrical Balance: In the above building, the form, texture and color of the building is not symmetric but it have the same weight in terms of visual force, although it is not corresponding, but it is balanced.	Radial Balance: In the above architectural object, a radial balance is arranged around a central element, which has the focal point of radial composition.

4.4. Vitality: Vitality means mobility and moving force. This feature induces movement and dynamism in architectural objects created by elements such as cantilevers, Arcs, color, texture and contrast of elements. [15]

Table 5. Showing vitality in architectural design through different method

	
The above building in Prague-designed based on vitality which present dynamism in which curved shapes and irregular windows arouse more interest.	In the Todd's building, located in Tokyo, mobility and dynamics are shown in terms of the contrast of construction materials solid and void elements.

4.5 Repose: This word is in contrast to vitality and dynamism, it means stillness and rest. This characteristic is provided in buildings through balance and calmness in form, color and integrity of the elements. [16]. Depending on the function and purpose of the buildings, this feature will make the architectural object attractive and beautiful.

Table 6. Showing Repose in Architectural Design through different method

		
In the above object, the use of white marble, green landscape, blue sky, balance in the combination of domes and minarets shows an image that brings repose and tranquility.	In the above example, the Gandhi Bowen building is a religious building located in Chandigarh city of the India. The large body of the catwalk in which there is no contradiction represents calm for the viewer.	In the above, church renovation, designed by Tadao Ando, is a low-rise concrete building with a green façade and relation to nature that creates a sense of calm.

4.5 Restraint: Restraint means a measure or condition that keeps something under control, restraint brings simplicity and elegance in the design, restrain characterized by Minimalistic in design, concentrate on the functionality of the building without additional ornamentation, restraint in design is the quality of holding it back and implementing something which solves the problem in the simplest way possible [17] .

Often designers want to show off, imprint their own identity on a piece of work. Too much of ornamentation, overwhelming colors, too many detail results in loss of focus and destroy the beauty of the building. Controlled Proportion and minimal design bring in inherited aesthetics in design. It is an architecture based on material honesty and structural integrity.

Table 7. Showing Restraint in Architectural Design

  One of the most important designs of the Ludwig Mies van der Rohe, located near Plano, Illinois. in accordance with the famous slogan of this architect (less is more) Farnsworth house is an example of classical architecture in which simplicity and elegance can be seen.	 The above design is related to the Toyota Municipal Museum, in which white frosted glass is used, with a reflecting pool and a granite arch, creates a feeling of calm and repose.

4.6 Rhythm: Rhythm is the regular repetition of components and elements in a composition, just as in the art of music this characteristic causes order and composition of poetry in the form of music. Rhythm in architectural design creates harmony, order and beauty. There are examples of this feature in nature that inspire architects and have been used in various architectural objects. Rhythm can be created by forms, elements, colors and textures [19].

Table 8. Expression of rhythm in art and creation

	
Rhythm in Architecture: The Parthenon temple is one of the most famous and influential Ancient buildings in the history of architecture which is formed as a round and domed temple with a rectangular portico in front of it Which displays a simple rhythm of columns.	Rhythm in Nature: According to the research done in the sunflower, the subject of rhythm can be seen in two cases 1- Rhythm in replacing grains and trains 2- Rhythm in its rotation towards the sun in terms of time

4.7 Hierarchy: The relative importance of a form or a part of a form, element and facade compared to other forms and parts of an architectural object based on an idea and logic that can be functional expectations, decisions of the designer or client. [20]. the principle of the hierarchy is that there are differences in the majority and perhaps in all architectural forms that indicate importance, functional role, body, and finally symbolic role. According to Hierarchy principles selection of exterior expression, spatial form and balanced location of elements in architectural designs from totality to detail and from detail to general is an artificial issue which is appointment by rules and provisions of architectural composition. Hierarchy can be created in three ways: through size and dimensions, through shape and form, and through positioning.

Table 7. Showing Hierarchy in Architectural Design

 An example of a hierarchy in the San Francisco Modern Art Building by Mario Butta shows this Characteristic by shape, color, and position of the central corridor.	 In the Vidhana Soudha building in Bangalore, India, the hierarchy is shown in terms of dimensions, shape and position.	 At the US Capitol in Washington, DC, the hierarchy is adapted into four stages, with the central dome dominating the composition.

5. Results and Conclusion

One of the most important and major topics in the field of architecture is the composition and artistic solution of architecture projects. From the beginning to the ending architecture projects require artistic thinking and adaptation, which can be seen in creativity and initiative. Despite the fact that artistic and creative issues don't have formula or limit, but if the above-mentioned issues are used in the stage of thinking about the formation and formal combination of architectural objects, then a harmonious solution will be created as a result of applying the above hierarchy, the architectural design will complete in an artistic and pleasant way.

Architectural design is a complex process full of requirements and questions, each of these requirements is challenging in most cases, the only correct solution is the artistic approach and full knowledge of architectural composition issues and balanced solution of the characteristics of architectural composition which were introduced.

The most basic stage of architectural design is thinking on paper or creating concept sketches based on which design is given, which later develops more, the architects important task is at this stage to arrange all the problems in a balanced way, when starting architectural design, the first activity performed by the architects is to choose the shape of the plan and the form of the structure which were discussed in the article. This work should be done in such a way which should be observed from the whole to the part and from the part to the whole of a sequence and

hierarchy. Within the scope of this study, the following conclusions have been reached:

- Architectural design is a critical step in creating an artificial environment for human beings, which should be done with the characteristics and requirements of human beings in accordance with nature.
- The issue of art and beauty has a profound effect on the planning of structures which is highlighted by the composition of architecture in the approach.
- Although science and technology has developed a lot the subject of art and beauty has its own influences in different periods of the history, which could attract the attention of scientists and researchers of the present time.
- The innate and psychological nature of human beings requires order and beauty around it, and in different stages of human life, this desire should be met through the artistic imaginations of architects.

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