

Aesthetics of digital formation with the beginning of the twenty-first century

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Summary of Research:

Change is a characteristic of every revolution that must occur when it takes place. The rise of the industrial revolution and the technological revolution have accompanied effects on various aspects of life, economic, political, literary, artistic, and architectural. By the age of information, it seemed that it was the beginning of a new revolution, the digital revolution. Here is the necessity for change caused by revolutions on various aspects of life like thought, art and architecture that is the front of civilization and progress of society.

Digital architecture helps the designer to create many difficult and complex combos by using the computer easily; it also gives him the freedom to choose the best design, and what differentiates digital architecture from the traditional architecture not only in the outer appearance but it creates a more freer interior spaces and they are flexible, dynamic and interactive, which contributed to changing the aesthetic view of the digital revolution, it drew a new path of beauty outside the framework of academic limitations and freed artistic beauty from the restrictions imposed on it in the past, which has weakened classical aesthetics and gave way to new aesthetic theories.

Because beauty is an important and necessary aspect of human life, digital design is considered a revolutionary design not only because of different forms resulting from it, but also due to its ability to suggest non-standard design alternatives and designs that move away from repetition, as the designer becomes free from closed ideas where straight lines and sharp angles to free dynamic lines, variable rhythm and high flexibility and interaction with the surrounding environment during the response to the external influences of the building.

The problem of the research is the possibility of explaining how to Understand the aesthetic values for digital formation and use it to develop the designer's skills and creative capabilities and to create a compatible design environment in all its elements, which is (function, form and beauty).

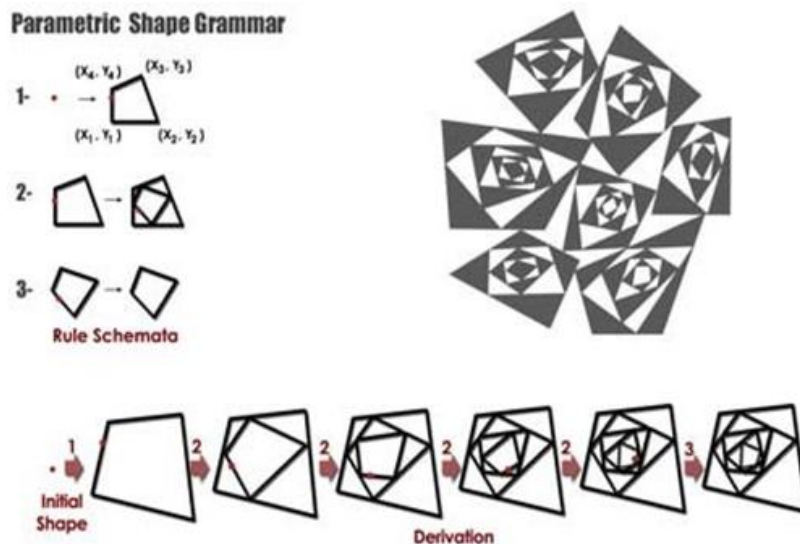
Keywords:

Aesthetics of jumping universe - Aesthetics of the digital age - Parametric Techniques Design- Animated Design –Generative Design .

Introduction:

In the middle of the twentieth century and with the beginning of the twenty-first century where the world is experiencing a quantitative and qualitative revolution in the fields of science and technology, and this is accompanied by an increasing decay of the time interval between scientific theories and their technical applications, and the successive development movement has produced architectural forms and products that are contrary to the prevailing patterns and architectural forms, prevailing the role of computing in the field of design (architectural - internal). Computing has affected the design form, as the trend began toward a computer-assisted formalization algorithm to produce the basic form, which is a single design composed of fonts, where the possibility of producing an infinite number of shapes.

That helped to have a new aesthetic language for the shape and the inner space that accompanies that development works to attract and arouse the interest of the recipient, saturating its senses through any of its sensory perceptions, which helps to increase the interaction between the recipient and the design, and to reach new aesthetic values, the digital form must be identified in the new design pattern.



Picture No. (1) ... a morphological base consisting of two elements intersecting at specific angles, from which infinite variations of form are derived.

Research problem:

Modern styles and concepts in (interior - architectural) design are slowly moving away from heritage aesthetics' as the aesthetic design philosophy began to change, through the selection of the initial idea to the final design as a result of the use of technology that the designer uses to implement his design idea, and to create a compatible design environment in all its elements which are represented in (job - shape - beauty). The designer needs to know the aesthetic and formal side, and from here the problem was determined by the following question: What are the aesthetic values of digital formation?

Research objective:

The research aims to develop the skills and creativity of the designer through studying the new aesthetic values for the digital age.

The research aims to revive the aesthetic values of digital interior design for the twenty-first Century.

Research Assumptions:

The research assumes that studying of developed aesthetic values helps in understanding the digital formations, and reaching a standard that contributes to measuring contemporary design aesthetics to help the designer produce design ideas that meet the aesthetic aspect and serve the field of design (interior - architectural).

Research importance:

The research contributes to the identification of aesthetic values with the emergence of the era of the digital revolution as a prerequisite for the designer to reach a compatible design. Art is a creative quality that the designer possesses by virtue of the technical expertise that he acquires. As a result of technological and intellectual development, new aesthetic visions emerged that reflect a global viewpoint that suits the twenty-first century.

Research Methodology:

The research follows the analytical descriptive approach through describing digital formation and analyzing the aesthetic values created for it through analyzing design patterns for the twenty-first century.

Form in the new design style:

The shape depended on the spirit of technology that dominates the age and affects the design and its aesthetics, as the shape has become a product of the behavior and dynamic movement of the strong.

1. Change the shape and concept of design.
2. Conventional rejection.

1. Change the shape and concept of design:**1.1. Non-digital designs:****A. Design based on Cracking Shapes:****a.1. Fractal Shapes:**

Fractals are defined as geometric or physical formations with irregular shapes or fragments. It can also be said that they consist of molecules derived at different scales, whether regular or irregular.

a.2. Fluid Fractals :

They are configurations that depend on the characteristic of curves and smoothness in several directions in terms of the infinite diversity of living organisms, where the smoothness of formation with multiple non-specific curves with a distinct feel.

a.3. Origami Forms:

They represent ripples and introverted shapes with twists, as the reflection of rigidity, movement, flexibility, balance, static and dynamic, and it produces expressions of life transformations from the immaterial state to its various forms.

B. Isomorphic Design:

Depends on the blob forms. Blob Forms are spherical shapes as a basis for formation, using digital forming processes where two or more two bodies are combined with different sizes and this difference determines how they fit together.

C. Metamorphic Shapes

Where formation depends on the sudden changes of the universe and interactions with cosmic phenomena and disasters such as landslides, cracks, earthquakes, volcanoes, and floods, where they are represented by highly broken lines and shapes, and depend on known solids such as cube, pyramid, and cylinder and do not depend on curves.

D. Topological formation:

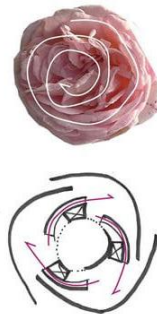
This type of design is based on the exploitation of the non-Euclidean engineering topology in creating new design formulations, and it is characterized by the use of complex and extended curved lines to make more complex configurations.

E. Geological Forms:

These are formations associated with the earth and the forces emanating from it, and geological metaphor, which are linked to urban design and coordination of the general site.

F. A- Shape-based design in biological nature

- Shapes in nature are appropriate to perform a specific function that includes several functions that are interfering without compromising the ecosystem.
- Shapes in nature are based on ideal principles of energy use without disrupting the ecosystem.
- Shapes in nature are able to adapt to environmental variables.



The Picture No. (1) ... design of the Exploratory Center for Children was designed by Henning Larsen in Damascus in 2012. The building was inspired by the shape of the Damask Rose, and this type of structure was chosen to take advantage of the emptying of the petals of the flower and the work of emitting light in the interior spaces. On inclined concrete columns, the character looks similar to the petals connected by metal structures.

1.2. Designs stemming from a digital idea (where the change from the form's work to the search for the shape):

Where its role is limited by setting a set of mathematical values that result in different formative properties.

A. Parametric Techniques:

It is a Parametric Techniques-based design, and the designer develops Scripting programming that enables him to control the form of the final formulation to reach an infinite number of design alternatives.

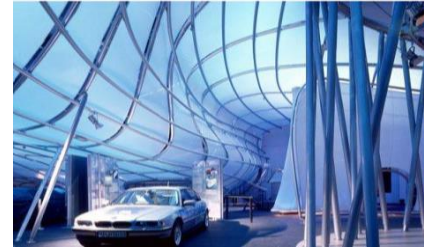
Picture No. (2) ... the parametric design of Harbin Cultural Island Project.



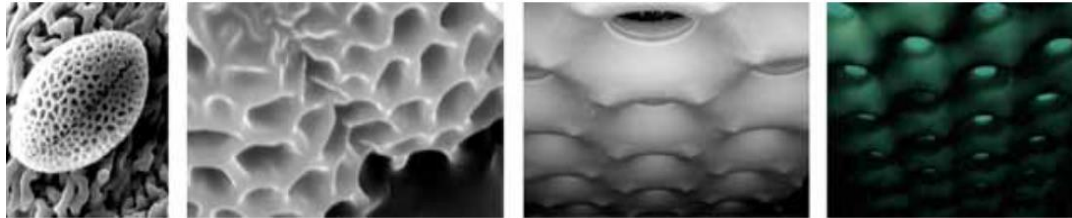
B. Animated Design:

Where the generation of shapes in a digital environment is affected by a hypothetical force simulated by one of the natural forces, such as the force of the wind, for example, or as the movement of users to a vacuum or sunlight

Picture No. (3) BMW Pavilion project designed by Bernhard Franken in Germany 2000 AD - where the idea of architectural space was generated using the strength of sunlight t, which produces effects on plastic surfaces on it.

**C. Generative Design:**

The reproductive or evolutionary model depends on the designer's control of the genetic gene responsible for determining morphological formulation through a series of models that the designer develops according to the simulation of the environment.



Picture No. 3 From the left, the photo shows the details of pollen grains using an electron microscope, all the way to using the digital design for a real ceiling design by Alberto T. Estevez..

2. Conventional rejection:

- A. Change the coordinates of the shape (free design).
- B. Resorting to unfamiliar forms.
- C. Colliding Volumes.
- D. Design contrast.
- E. Intangible electronic spaces.

Aesthetic values introduced for the new design shape:**A. Aesthetics of the jumping universe:**

- Dynamism: It emerged as a result of the evolutionary nature of the universe, and it gives the recipient a sense of permanent motion and continuity of formation.
- Extension and development: It is due to the continuous cosmic expansion and development, where the continuous cosmic transformation and change of the aesthetics of movement and growth.
- Unity and continuity: The universe is based on unity and continuity, from its smallest elements to the largest, where we find human and animal forms despite the multiplicity of its parts, but the formation is a brain that controls all of them to work in continuity.
- Surprise and mutation: It is the result of rapid changes that are related to the occurrence of genetic mutations and non-linear transitions.
 - Partial mutations.
 - Great mutations.

- **Ambiguity:** where mystery is considered one of the secrets of the creation of the universe and the secret of its greatness, and the complexity comes as a result of the regularity of natural formations by itself during its various transformations.
- **Flexibility:** which emits from the energy of the latent form, and the elasticity of the shape is directly proportional to development and complexity.



Picture No. (4) ... The design of the Haider Arif Center for Zaha Hadid in Baku city. The design is similar to a wave that rises from the ground to the sky and then descends in varying proportions. The design lines suggest dynamism and development.

B. Aesthetics of the digital age

- **Dynamic:** Shows the result of movement and the constant change of interactive surfaces provided by digital technologies and virtual reality architecture.
- **Interaction:** Interaction is one of the values of the digital age that did not exist in the traditional design output. Media surfaces and digital screens provide a kind of interaction between design and receiver, to become responsive and interactive design.
- **Diversity and change:** Diversity and change arise as a result of changing the formal and color content of media surfaces and digital screens as a result of optical technologies.



Picture No. (5) ... shows an interactive wall of St. Luke's Hospital, Kansas City 2011 AD - where the dynamics and interaction emerge as a result of a multi-touch interaction as the design changed from a traditional wall to an interactive wall with a variety of formation.

- **Dynamic equilibrium:** equilibrium in the digital age is associated with movement and the abandonment of stillness as the design parts flow through the values of transformation and breaking symmetry to share among themselves to maintain the balance of the overall formation, and exit from the static state and the static stability resulting from classic symmetry.
- **Variable rhythm:** The rhythm was related as a result of parametric and fractal formations that are characterized by repetitive units which are repeated according to a varied rhythm of variable measurement and direction.

- Inconsistency and transformation: It emerged as a result of the liberation from standard autism and the resort to colliding blocks that contributed to the formation of structural diversification and variation in movement trends.

Picture No. 6) ... shows O-14 Tower, Dubai 2010, designed by Razer Office - where the changing rhythm appears due to the diversity of sizes of the fractal units that cover the building.



Results:

- Nonlinearity is one of the most prominent features of digital formation, where the vocabulary of formation has been characterized by a tendency to bend, break, ripple, and the appearance of flat, topological, and other surfaces.
- Aesthetic values have changed in the modern era, where the concept of a special beauty resulting from the cosmic nature and digital techniques is the biggest supporters in shaping digital aesthetics.
- The aesthetic view in the digital age shifts from calm and simplicity to dynamism and complexity, where the tendency is to aesthetic visions that criticize the principles of calm, simplicity and formal equilibrium, to call for dynamism, energy and dynamic interactivity characterized by the dynamic and turbulent nature of the age.
- The strength of the technical impulse appeared in controlling the design process in the digital age, which resulted from forms stemming from a digital idea such as design based on variables - reproductive design - mobile design that contributed to enriching the developed aesthetic values.

Recommendations:

- The designer must see all that is new and not separate from modern science, in order to achieve a design characterized by aesthetic values, creativity and modernity.
- Beauty is proportional according to the taste of the recipient and according to the direction that he belongs to, where the different characteristics of society and the circumstances of the age, so what is beautiful now will not become so after a month according to contemporary interpretations, and therefore the designers of the digital age must not separate from the cultural and environmental dimension of their society.

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