



The Aesthetics in Three Dimensional Organic Objects Within Relation to Mandelbulb Algorithms to Enrich Design

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Introduction

Design as an Art

The research paper explores the notion of design as a plastic art, emphasizing the structured effort and deliberate plan required to create a cohesive unit that fulfills the design's ultimate objective. According to (Robert Gillam Scott, 1990), the design process is characterized by creative and innovative work that achieves its intended purpose.

The study illuminates the intellectual and planning stages of design, with the goal of identifying the basic principles and phases through which a design matures into its final form. Additionally, it examines the use of 3D organic objects within the 3Ds Max environment, enhanced by Mandelbulb algorithms, to refine design artworks. The paper asserts that design pervades all facets of contemporary life and is regarded as an essential human activity, involving creativity and innovation to accomplish its goals. The core principles of design are portrayed as the primary aesthetic objectives that express the designer's unique and individual vision.

Employing Methods for Conveying Messages through Artwork

Furthermore, the paper explores several techniques that designers can use to establish the core principles of their designs and effectively communicate their intellectual and aesthetic intentions through their creations. It provides insights into identifying the fundamental elements upon which the design was constructed and the developmental stages it underwent to achieve its final form. (Mohamed Hafez El-Khouly, Mohamed Ahmed Salama, 2007)

The Interplay of Design, Art, and Technology

Overall, the paper elucidates the complex interplay between design, art, and technology, highlighting how 3D modeling and algorithmic manipulation enhance design artworks. It provides insights into the creative and innovative dimensions of the design process, emphasizing the importance of attaining aesthetic objectives while embodying the artist's unique vision and expressive intent. The study explores the multifaceted nature of design, portraying it as a vital and dynamic element of contemporary life that merges creativity, technology, and artistic expression to create compelling visual experiences. Numerous methods are available for designers to adopt in achieving these

foundational principles and conveying their intellectual and aesthetic messages through their work. (Ismail Shawky Ismail, 2002).


The element used in the exhibition "Shape"	
	The Concept Shape Means
	<p>A shape is a two-dimensional element that can be identified. It occupies a defined space with specific dimensions and can be formed in various ways. A shape is created using lines to outline its boundaries. For instance, drawing a square on paper involves creating lines that define the area inside the square from the area outside it. The boundaries of the square are edges that separate the shape from the background.</p> <p>Shapes can also be recognized by their height in a certain material or texture. For example, an unkempt square patch of grass in a neatly trimmed field, or a square filled with lines within a larger square without lines, demonstrates this distinction.</p> <p>Color changes can also indicate shapes. Two commonly used terms in design are "shape" and "form." A body can be referred to as a specific type or complete work, like triangular shapes. While a drawn circle is a shape, when represented as a three-dimensional ball, it is considered a form (Form).</p>

Figure (1) shows examples of Shape

Second: Computer programs used in the second exhibition

(1) Mandelbulb Program

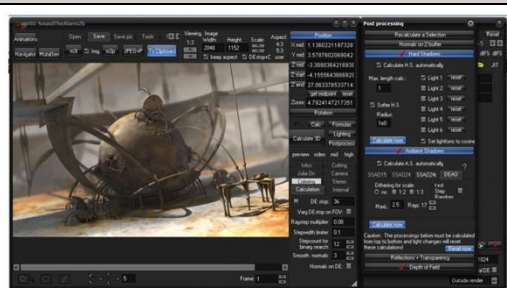
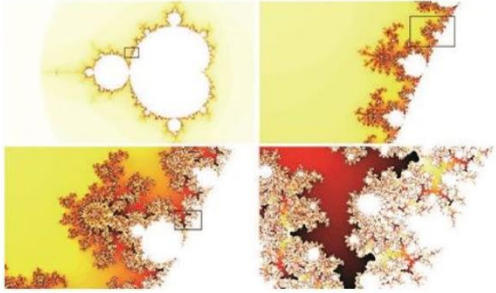


Figure (35) shows the figure of the latest version of the program (Mandelbulb 3D V1.90) used by the researcher.

Introduction

The researcher touched on the use of this program to treat the surface of the organic form in the vacuum, as it depends on the three-dimensional algorithmic fractal repetition in the void (Hypercomplex and Multi-Hypercomplex Fractal), which gave the researcher the idea of the possibility of treating what appeared from the surfaces of its organic forms in his work with this program for the relationship of both to the process of repetition in the design and that they and they deal with three-dimensional shapes, with the difference in the mechanism of the repetition process between the current program and the method of repeating the researcher in his work for the organic form.

	historical background
 <p>Figure (36) shows the process of magnification in Mandelbort models.</p>	<p>The art of fractals has undergone several developments, and it is an art that depends in its composition on formal iterations with an accurate arithmetic system and complex arithmetic equations that originate from the algorithmic calculations that some scientists used with Newton's laws.</p> <p>Where more interest began in the process of repeating complex arithmetic operations more than a century and a quarter ago in 1870, Ernst Schröder paid attention to the collection of repeated algorithmic relationships in solving equations with interest in the collection of Newton methods for the function of the calculation: $N_f(z) = z - f(z)/f'(z)$.</p> <p>He found that the base coefficient P corresponds to the constant point F in N_f :</p> <p>This conclusion led him to generalize Newton's method to other computational methods. In addition, (Schröder) showed that Newton's method: $f(z) = z^2 - 1$ This conclusion led him to generalize Newton's method to other computational methods. In addition, (Schröder) showed that Newton's method: 1 He also noted his total precise dependence on imaginary axes developed by Newton.</p>

Research problem:

the researcher wonders how and to what extent benefit from applying The Aesthetics in Three Dimensional Organic Objects Within Relation to Mandelbulb Algorithms to Enrich Design

Research hypothesis:

There is a positive relationship between the The Aesthetics in Three Dimensional Organic Objects Within Relation to Mandelbulb Algorithms and Enrich Design

Research Objectives:

Finding the relationship between The Aesthetics in Three Dimensional Organic Objects Within Relation a Mandelbulb Algorithms and Enrich Design

The importance of research:

Demonstrate: the possibility of using computer programs in the field of design teaching

The possibility of using more than one program at a time within the design panel

Research Limits

- Number of design artwork: 21 works.

- Design artwork size: 33x45 cm.

Programs used:

- 3Dmax 2013.

- Mandelbulb.
- Photoshop.

Research Methodology:

The current research methodology falls within the experimental methodology.

Associate Studies:

1- James Hutson, Martin Lang, 2023

"Content creation or interpolation: AI generative digital art in the classroom"

- In a digital art class, students were introduced to Craiyon and Midjourney AI tools, with DALL-E 2 emphasized for its varied output.
- They selected a preferred prompt and recreated the results using both tools.
- Findings revealed significant differences in reproducing outcomes among the AI tools.
- Limited prompt engineering exploration constrained the iterative art-making process.
- Students agreed that generative AI tools cannot replace human creativity and should be utilized for final projects.
- This study highlights the potential and limitations of AI in art and design, indicating a need for improved prompt engineering strategies.
- The previous study solely tested the MidJourney program.
- It aimed to uncover its repetitive programming nature and determine its importance for artistic creativity.
- Students were not required to create or analyze artwork.
- Insights from the previous study can inform the application of computer programs in the design field.

2-(Kateryna Osadcha, Victoriia Baluta, 2021)

"The influence of modern trends in digital art on the content of training in computer graphics and digital design"

- The rise of digital technologies has introduced new areas in the arts such as computer graphics and digital design, leading to phenomena like digital art.
- This article explores these developments and highlights key trends:
 - Virtual art
 - 3D printing
 - Open source software
 - AI art
 - 2D animation with modern tech
 - 3D painting
 - UX/UI design
 - Game design
 - Concept art
 - Character design
- It provides examples of these trends in modern art and discusses their impact on digital design education.
- It emphasizes the need for students to understand traditional art concepts and how to apply them using digital tools and technology.
- Previous studies on digital technologies' effects on design can inform current research on addressing technological advancements and their impacts on three-dimensional design.

3-(Chen, Yanlin; Zou, Wei; Sharma, Amit, 2021)

“Graphic Design Method Based on 3D Virtual Vision Technology”

- **Background:**
 - Computer vision research and 3D models are used to reconstruct 2D images.
 - These studies are common in computer graphics due to their wide applications.
- **Methodology:**
 - Graphic designs were transformed from 2D to 3D to better convey virtual vision technology concepts.
 - An interior design platform was established based on 3D virtual vision and interactive design.
 - Functional design of 3D visual effects displays for the interior design platform was introduced.
 - The platform's 3D virtual rendering capabilities were developed.
- **Results:**
 - The traditional interior design platform was enhanced by integrating panoramic information with 3D virtual vision technology.
 - This enhancement allowed for recording and analyzing results, creating the necessary image workflow for a fully functional interior design platform.
 - Comparative analysis between conventional and enhanced interior design platforms was performed.
- **Conclusion:**
 - The interior design platform can accurately identify interior landscape positions and generate high-quality 3D images.
 - Previous research on digital technologies' impact on design can guide current studies on technological advances and their implications for three-dimensional design.

4-(Lugrin, Cavazza, Crooks, & Palmer, 2006)

"Artificial Intelligence-Mediated Interaction in Virtual Reality Art"

- In entertainment, AI has been used to create embodied agents and generate artistic content automatically.
- Recently, AI supports user experience through new interactivity techniques, particularly for interactive 3D art installations.
- The research began with describing high-level behaviors for VR art installations.
- The approach calculates dynamic consequences from user interactions, producing cascading effects that evoke specific experiences based on the artistic brief.
- Previous studies focused on using AI and VR to enhance virtual reality art.
- The current research draws aesthetic inspiration for analyzing art research design.

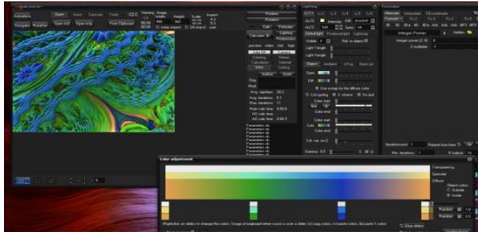
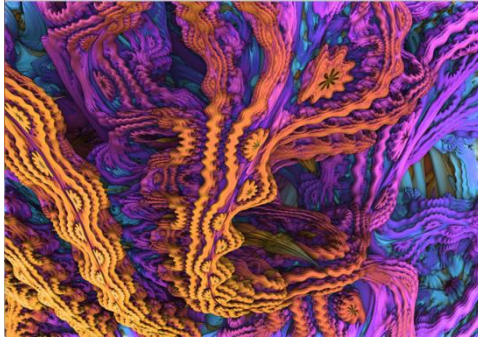
5-(Lican Chen, 2000)

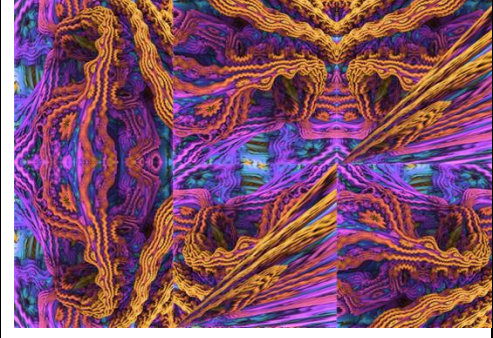
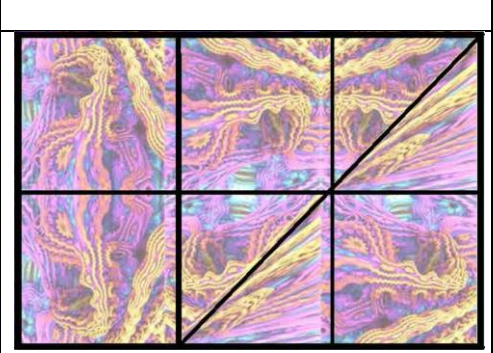
“Application of 3D Design Software in Graphic Design”

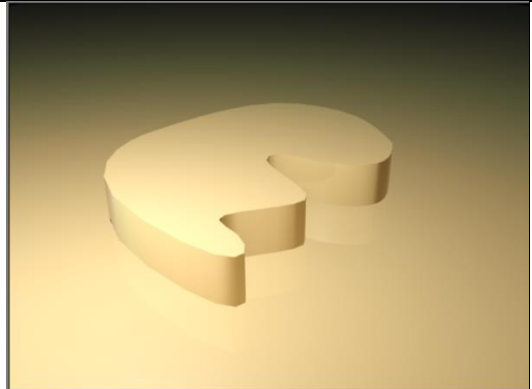
- The evolution of graphic design is linked to:
 - Advancement of digital technology, leading to diverse design methods and communication channels.
 - Shifts in the aesthetic sensibilities of graphic design audiences.
- Digital technology provides the material foundation for graphic design's progress.
- Changes in viewers' aesthetic preferences drive its development, with both elements complementing each other.
- The rapid growth of 3D design software and its increasingly robust features have prompted many graphic designers to integrate these tools into their work.
 - This enhances the efficiency of designers.

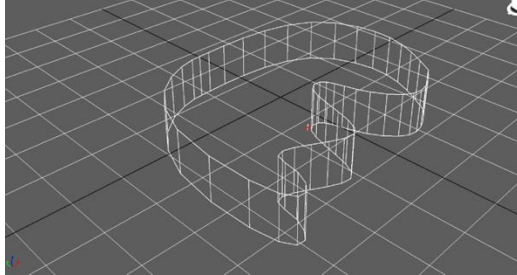
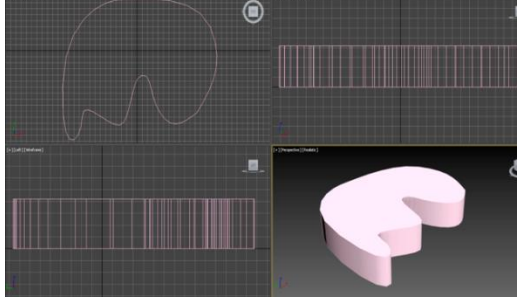
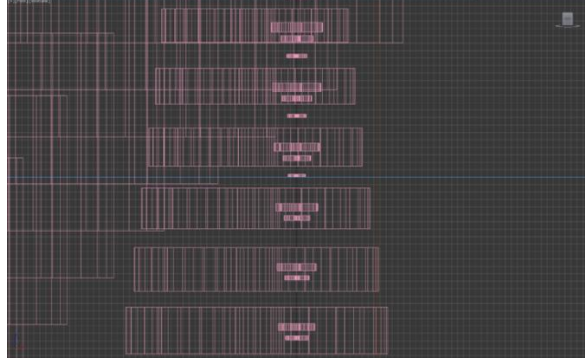
- It significantly enriches visual expression, providing viewers with an immersive experience.
- Consequently, it boosts brand recognition and supports effective brand promotion.
- This study sheds light on the impact of digital design on the field and its influence on aesthetic trends.
- Offers insights that can inform contemporary analyses of current artworks.

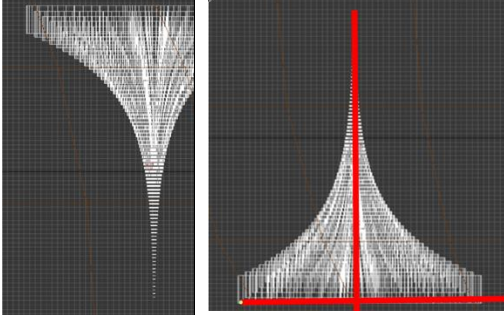
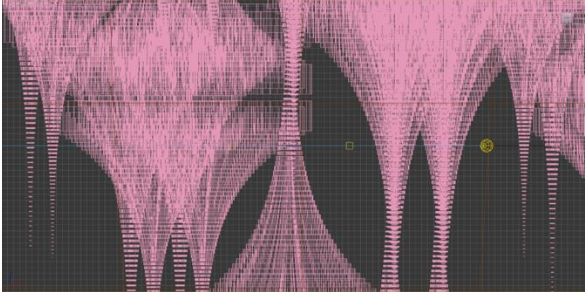
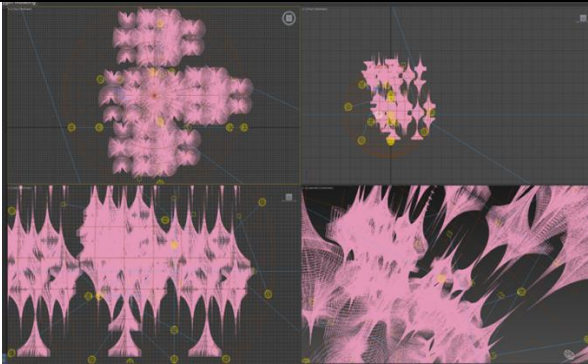
The following is the artworks and its analysis:

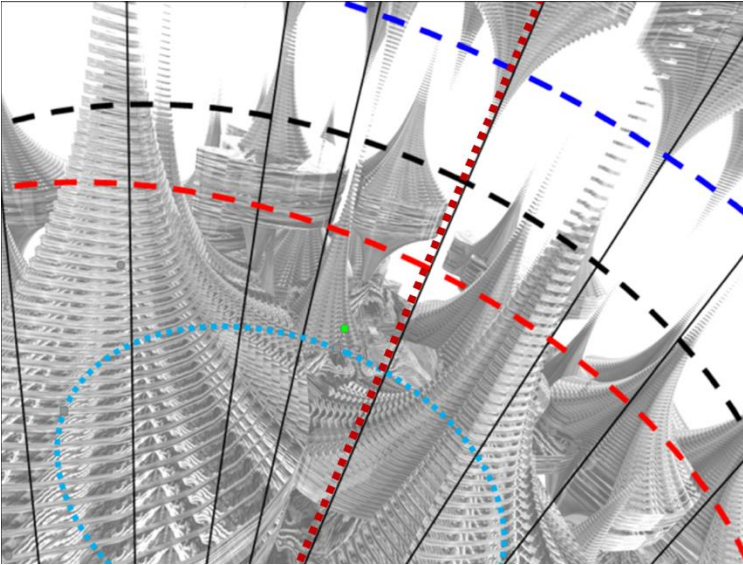
The First Artwork			
Analysis of the design artwork of the surface treatment of the construction "first Artwork"			
	The model was Chooosed by (integer power) from the program, where the presence of organic details in it is better and the process of reproduction of shapes during the process of zooming and penetrating the shape is better than others, where soft shapes inspired by the main shape breed in the form in the program as we grow the shape more and more, and this is one of the distinctive characteristics of these models in this program, where the dimensions of the entrance were 30 cm x 40 cm	Portal shot selection stage	Stages of analysis of the design treatment of the unit "organic Shape"
	The degree of clarity of the entrance was 1920 x 1440 pixels, and the reason for the high degree of clarity is that it will help the researcher later in the work of the (material) or cover the formal single of the final shape after that, at first the movement was around the model (Integer Power) and then it was approached and entered into it more and more, as one of the characteristics of the program is that it provides a sample of smart models that the program processes (simulations) purely arithmetic to solve the growth and reproduction of the elements of the form during the process of zooming in and roaming inside And about the shape, so that until the current shot was reached. Where the paths of the elements varied and the colors reverberated indirectly in achieving the rhythm, in addition to that the colors of the shot were processed through the program as well	Portal shot preparation stage	

	<p>After completing the selection of the formal entrance snapshot, it was processed by inserting it into the geometric retinal system, where the formal entrance shot was repeated inside the retinal cells, where the researcher used in this entrance the composite retina, in which he relied on merging the square cell with the triangle.</p>	The stage of building the Grid of the Portal	
	<p>In some cells, the shot is fully used, and in some cells, such as triangular cells, the dimensions of the main entrance shot (SKEW) are misrepresented, through which the measurement of one side is distorted in one figure.</p> <p>Through elongation, zoom, zoom in and out, the current morphological entrance within the geometric retina was addressed.</p>		

The First Artwork			
Model Structural Object Analysis			
	<p>Organic shape, where the dimensions of the organic form from the farthest point around it from length, width and height were 29x23x7 cm.</p> <p>A smooth texture with a surface such as glaze was chosen to show the bends of organic shapes during the use of light and reflect on its surface indirect repetitions of the overall shape to enrich the rhythm and unity in the artwork.</p> <p>Non-transparent in order to show the image of the formal entrance to it clearly, and also so that the forms of object do not overlap and the shape of the formal entrance does not appear .</p>	The shape of the Object used	Stages of analysis of the Object used in the First Artwork

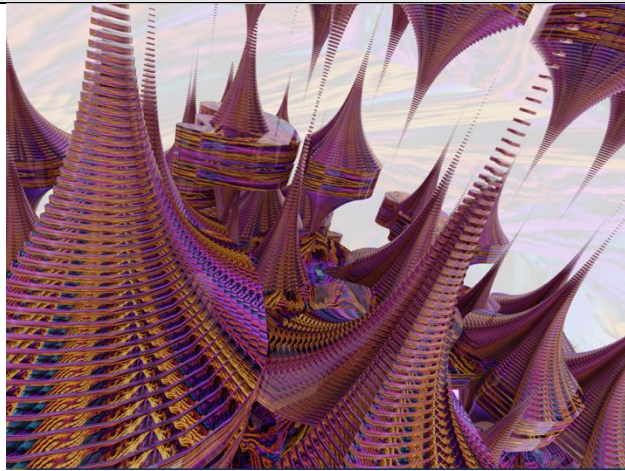
	<p>The shape of the formal object resulted because of drawing a free organic space by placing several points on the organic line, then the line was processed by moving and changing the position of the points placed on the organic line more than once until the organic shape in front of us was formed.</p> <p>Then a height was placed for the organic form by repeating the organic form twice on top of each other and connecting them by connecting the points that were placed on the organic line</p>	<p>Analysis of the Object</p>	
	<p>The upper projection is the area of the drawn organic shape. While the left and front projection show the height and number of lines responsible for the smoothness of the aspects of the formal object.</p> <p>The number of existing surfaces surrounding the organic form reached 220 surfaces resulting from its division through 110 longitudinal lines connecting the points that were placed on the line drawn by the shape that repeated and created the current object.</p> <p>It is possible to increase the number of divisions of the height of the object so that the sides of the single have a smooth surface by increasing the number of points that make up the repeating organic shape to increase the number of sides connecting them.</p>	<p>Analysis of the projections of the Object used</p>	
<p>The First Artwork</p>			
<p>Analysis of the first form of the formal Object "organic form"</p>			
	<p>The reason for choosing the straight horizontal geometric axis is that it will not be relied on in this shape on the curves of the axis to highlight the aesthetics and details of the final shape, but through the shape of the single and the shape of the entrance retina on it and how to formulate it in the form of the design.</p>	<p>Axis construction stage</p>	<p>Stages of building the formal formulation of the first model</p>

	<p>The formal Object was repeated on the geometric horizontal axis line from largest to smallest so that the center of the formal object was placed on the straight axis line.</p> <p>Where the repetition of the singular on the axis reached 150 formal singles,</p> <p>Where the higher we go in the process of repetition to the top, the smaller the size of the object.</p>	<p>The stage of placing the formal Object on the axes</p>	
	<p>Then a new pyramidal shape was produced after the completion of repeating the object, it was copied horizontally on the x axis on the opposite side below it or what is known as (mirror copy) so that the original shape completes the copied shape, as shown in the figure.</p>		
	<p>During the process of copying the shape, care was taken to have a contact relationship between the two forms so that the formal object does not overlap, then the shape was repeated more than once in several directions with enlargement and reduction, and in order to complete the rhythm of the new organic form and maintain the highlight of its artistic aesthetics by maintaining the various curves of the shape, in addition to reviewing the flow of the organic form in terms of succession and sequence of its object, as this will allow diversity in the selection of scenes .</p>	<p>Completion phase of formal drafting construction</p>	

The First Artwork			
Anae first artwork in the light of the foundations and elements of design			
		<p>The rhythm appeared in the chanting of the axes of the circular painting, where those axes passed through the parts of the figure in the scene, as the dashed blue axis passed from above in the painting with the ends of the repetition of small formal object from the top of the scene.</p> <p>While the black circular axis passed the end of the rotation of the main axes in the scene from the top of the painting, which shows the sequence of movement of the structural axes of the shape, on which the formal object was repeated from largest to smallest.</p> <p>As for the third red axis, it passed through the middle area of repeating the structural geometric axes of the painting and the beginning of the end of the interstitial spaces in the current shot.</p> <p>The last blue axis symbolizes the agglomeration in the painting through the superposition of formal object in the scene.</p> <p>The red line drawn in dots represents the main axis of the painting, which gave a balance in shape.</p> <p>While the sub-lines are represented by the italics in the painting, they represent the direction of the eye in the painting and the direction of the formal object within the painting. .</p>	<p>Analysis of the axes of the construction of formal formulation</p> <p>Analysis of the formal formulation of the first artwork</p>

The First Artwork

analyzing the first artwork in light of the foundations and elements of design



There is a chromatic rhythm through the appearance of blue and its repetition indirectly in the painting by forming some resulting reflections on the surfaces of the object,

Light is emitted from inside the shape and a little from outside in this shot, as well as the faint red light reflected between the main axes of the shape Tara and from within the focus of the shape Tara another.

The rhythm also appeared in the distribution of dim white light from the ball surrounded inside the shape to achieve a percentage of gloss in the letters of the monophonic form.

Also, the appearance of the variation of sizes and dimensions between the elements in the perspective frame resulting from the lens shot achieved a kind of proportionality and unity of the artwork in.

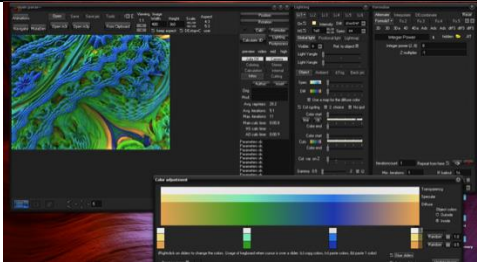

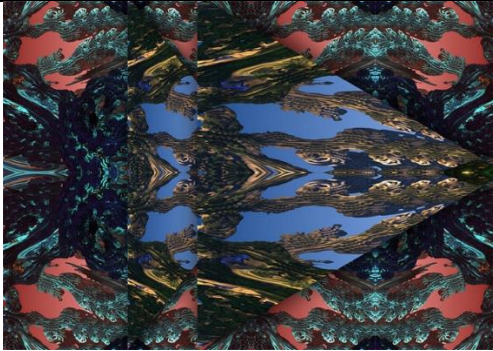
And also the reflection of some of the green and white light placed outside the figure gave some of the gloss to the borders of the singular,

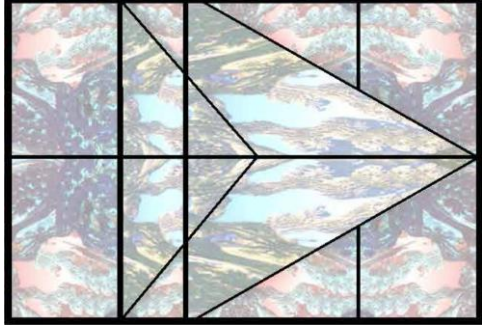
While the equilibrium also appeared in the distribution of formal object around the main axis of the painting in this scene of the painting.

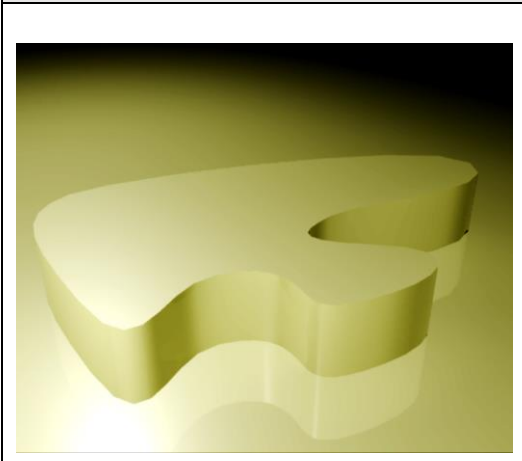
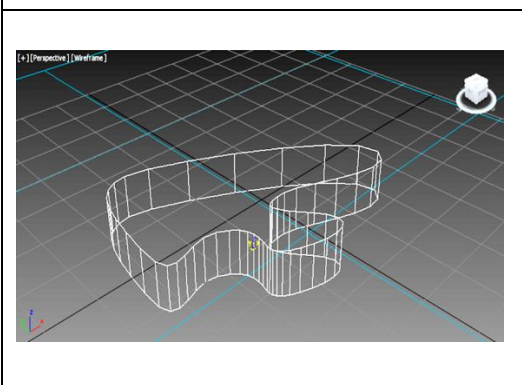
The reflection of the shape on the mirror in the concave background of the shape in which the shape is placed also resulted in repetitions of the shape and lighting at the top of the painting, which enriched the rhythm and unity .

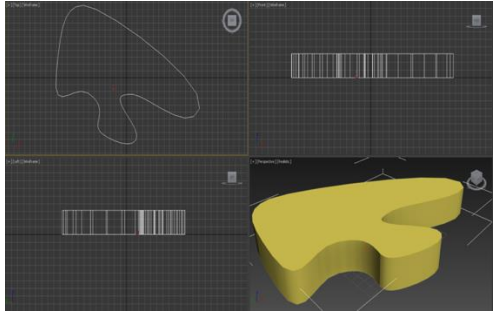
Analysis of formal formulation through the foundations of design

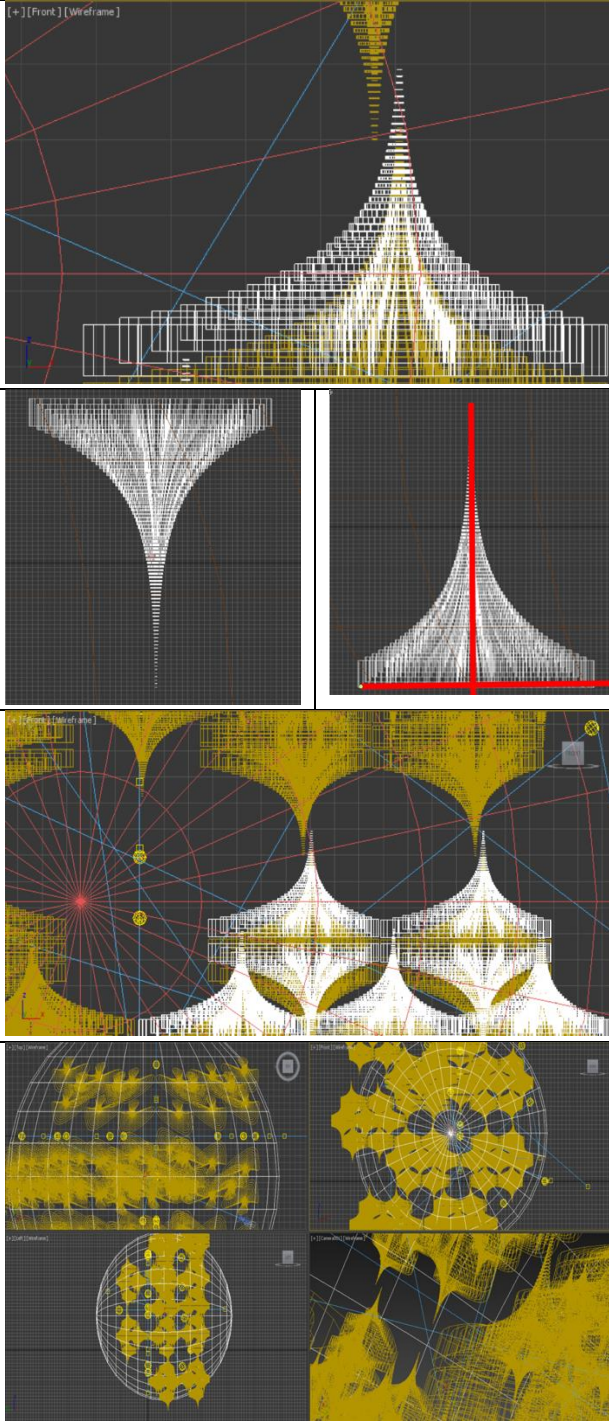
Continue analyzing the formal formulation of the first artwork

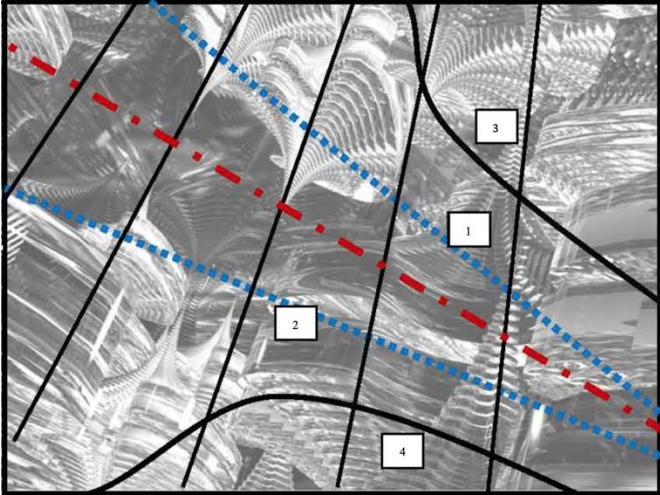
The Second Artwork				
Analysis of the design artwork of the surface treatment of the construction				
	<p>The model (integer power) was chosen from the program, where the presence of organic details in it is better and the process of reproduction of shapes during the process of zooming in and penetrating the shape is better than others, as soft shapes inspired by the main shape breed in the shape in the program as we grow the shape more and more, and this is one of the distinctive characteristics of these models in this program, where the dimensions of the entrance were 30 cm x 40 cm</p>		Portal shot selection stage	Stages of analysis of the design treatment of the unit "organic Shape"
	<p>The value of clarity of the entrance was 1920 x 1440 pixels, and the reason for the high degree of clarity is that it will help the researcher later in the work of the (material) or cover the formal single of the final form after that, at first the movement was around the model (Integer Power) and then it was approached and entered into it more and more, as one of the characteristics of the program is that it provides a sample of smart models that the program processes (simulations)) purely arithmetic to solve the growth and reproduction of the elements of the shape during the process of zooming in and wandering in and around the shape, until the current shot was reached. Where the paths of the elements varied and the colors reverberated indirectly in achieving the rhythm, in addition to that the colors of the shot were processed through the program as well .</p>		Portal shot preparation stage	
	<p>After completing the selection of the formal entrance snapshot, it was processed by inserting it into the geometric retinal system, where the formal entrance shot was repeated inside the retinal cells, where the researcher used in this entrance the composite retina, in which he relied on merging the square cell with the triangle.</p> <p>In some cells, the shot is fully used, and in some cells, such as triangular cells, the dimensions of the main entrance shot (SKEW) are misrepresented, through which the</p>		The stage of building the Grid of	

	<p>measurement of one side is distorted in one figure.</p> <p>Through deletion, elongation, zoom, zoom and overlay, the current formal entrance was processed within the geometric retina, so the scene progressed two overlapping triangles, the largest of which was treated with the elongation of the entrance shot, while the smallest was treated by deleting some of the shape of the entrance, and behind them the painting was treated with a retina whose shots were distorted by elongation in its cells.</p>		
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The Second Artwork			
Model Structural Object Analysis			
	<p>Organic shape, where the dimensions of the organic form from the farthest point around it from length, width and height were 52x21x6 cm.</p> <p>A smooth texture with a surface such as glaze was chosen to show the bends of organic shapes during the use of light and reflect on its surface indirect repetitions of the overall shape to enrich the rhythm and unity in the artwork.</p> <p>Non-transparent in order to show the image of the formal entrance to it clearly, and also so that the forms of object do not overlap and the shape of the formal entrance does not appear .</p>	The shape of the Object used	Stages of analysis of the Object used in the First Artwork
	<p>The shape of the formal object resulted because of drawing a free organic space by placing several points on the organic line, then the line was processed by moving and changing the position of the points placed on the organic line more than once until the organic shape in front of us was formed.</p> <p>Then a height was placed for the organic form by repeating the organic form twice on top of each other and connecting them by connecting the points that were placed on the organic line</p>		

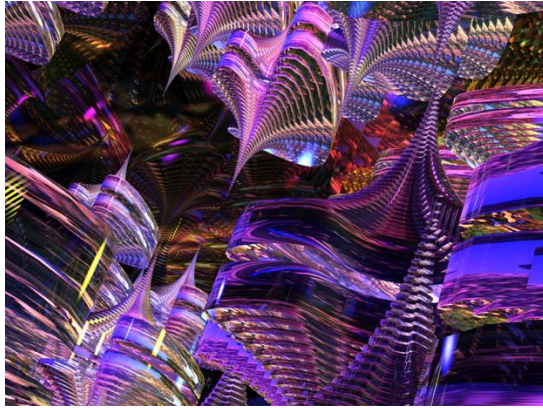
	<p>The upper projection is the area of the drawn organic shape. While the left and front projection show the height and number of lines responsible for the smoothness of the aspects of the formal object.</p> <p>The number of existing surfaces surrounding the organic form reached 240 surfaces resulting from its division through 120 longitudinal lines connecting the points that were placed on the line drawn by the shape that repeated and created the current object.</p> <p>It is possible to increase the number of divisions of the height of the object so that the sides of the single have a smooth surface by increasing the number of points that make up the repeating organic shape in order to increase the number of sides connecting them .</p>	<p>Analysis of the projections of the Object</p>	
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The Second Artwork			
Analysis of the Second form of the formal Object "organic form"			
	<p>The straight horizontal geometric axis was chosen because it doesn't depend on axis curves to emphasize the aesthetics and details of the final shape. Instead, it's influenced by the form of individual elements and the design of the entrance retina.</p>	Axis construction stage	Stages of building the formal formulation of the first model
	<p>The formal Object was replicated along the geometric horizontal axis from largest to smallest, aligning its center on the straight axis line. This repetition extended to 160 individual forms along the axis. As the objects were repeated upwards, their size progressively diminished. When the process was completed, a new pyramidal shape emerged. This shape was then mirrored horizontally on the x-axis below it, combining with the original to create a complete form, as depicted in the figure.</p>	The stage of placing the formal Object on the axes	
	<p>In replicating the shape, careful attention was given to ensuring a contact relationship between the two forms to prevent any overlap of the formal object. The shape was then duplicated multiple times in various directions, while either enlarging or reducing its size. To enhance the rhythm of the newly created organic form and emphasize its artistic aesthetics, the diverse curves were maintained. Additionally, the flow of the organic form was reviewed in terms of its succession and sequence, facilitating a broader selection of scenes.</p>	Completion Stage of formal formulation construction	

The Second Artwork			
Analysis of the second artwork in the light of the foundations and elements of design			
			<p>The rhythm was evident in the chanting of the painting's axes, where these axes intersected with parts of the figure within the scene. Axis No. 1, represented by dashed blue lines, extended from the top of the painting, connecting with the repetitive small formal objects at the top of the scene. Axis No. 2, also blue, ran through the end of a cluster of single formal elements below the plate. In contrast, the black axis No. 3 intersected the block of formal objects at the top of the panel, illustrating the sequence of movement along the structural axes of the shape, where the formal object was repeated from largest to smallest. The black axis No. 4 traversed the block of formal objects at the bottom of the painting, similarly revealing the sequence of movement along the structural axes within the artwork. The third red axis ran through the center of the repetitive geometric axes and marked the beginning of the end of the interstitial spaces. Additionally, the diagonal sublines in the painting indicated the direction of the viewer's gaze and the orientation of formal objects within the composition.</p>
			Analysis of the axes of the construction of formal formulation
			Analysis of the formal formulation of the Second artwork

The Second Artwork

analyzing the Second artwork in light of the foundations and elements of design



This design appears as if it were photographed at night due to the diminished light from the glowing orb encircled by the figure in the painting. Additionally, objects positioned above the figure in the current shot have obstructed the direct white light on the subject.

There is a chromatic rhythm created by the recurring blue hues, which indirectly form reflections on the surfaces of the object. Light emanates both from within the shape and slightly from outside in this shot. A faint red light is reflected between the primary axes of the shape called Tara, as well as from within another focal point of Tara.

The rhythm is also evident in the distribution of soft white light from the internal orb, providing a glossiness to the letters of the monochromatic form. The varying sizes and dimensions of elements within the perspective frame achieved through lens shots contribute to the proportionality and unity of the artwork.

Furthermore, the reflection of green and white light placed outside the figure adds some gloss to its borders. Balance is also manifested in the arrangement of formal objects around the central axis of the painting in this scene.

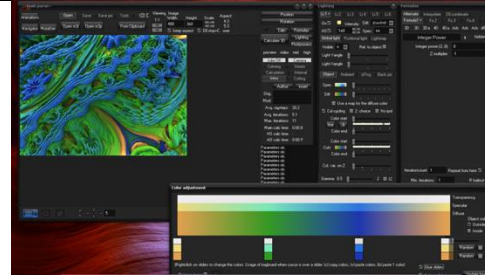
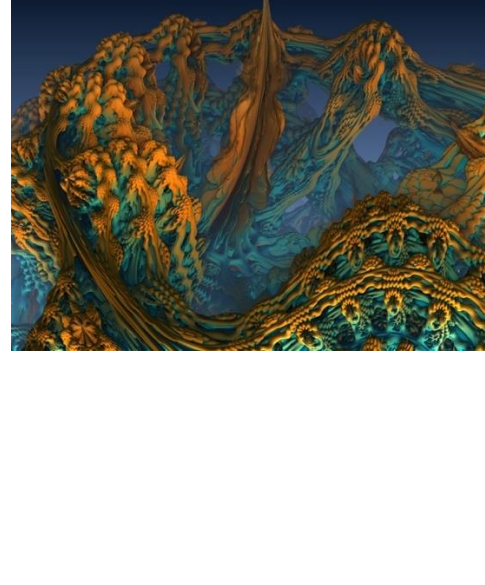

The mirrored reflection of the shape on the concave background, where the shape is positioned, results in repetitions of the form and illumination at the top of the painting, enriching both the rhythm and unity.


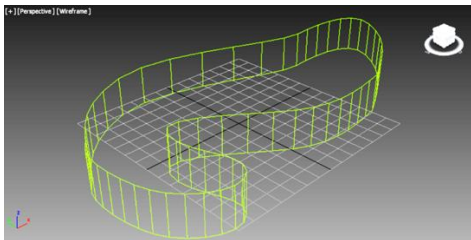
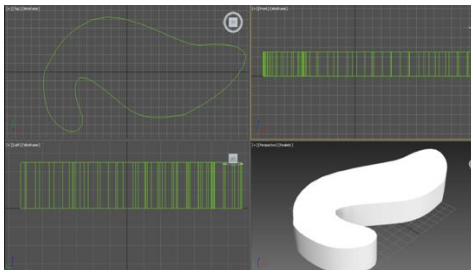
Analysis of formal formulation through the foundations of design

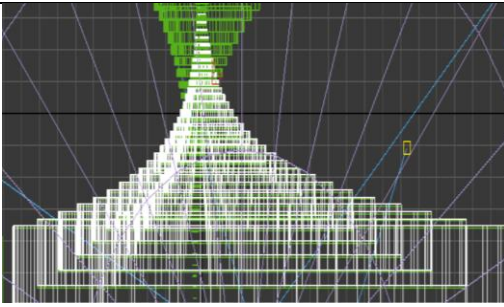
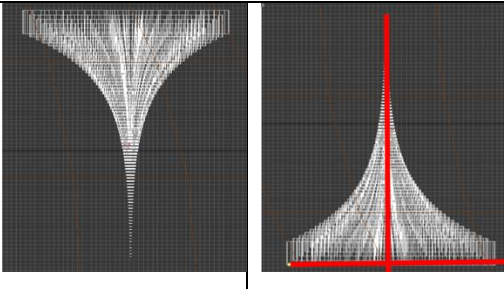
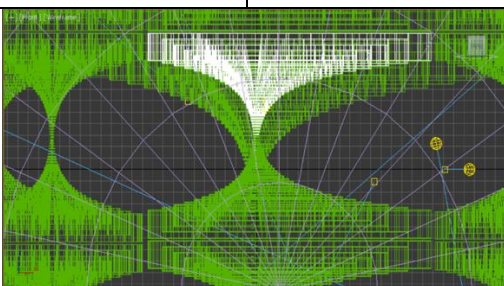
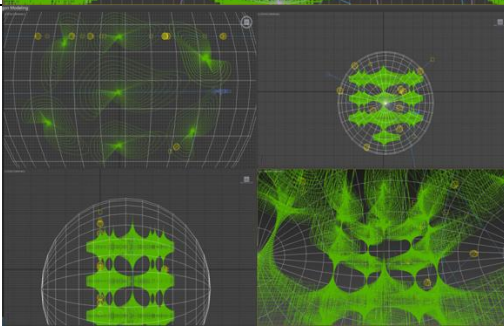
Continue analyzing the formal formulation of the Second artwork

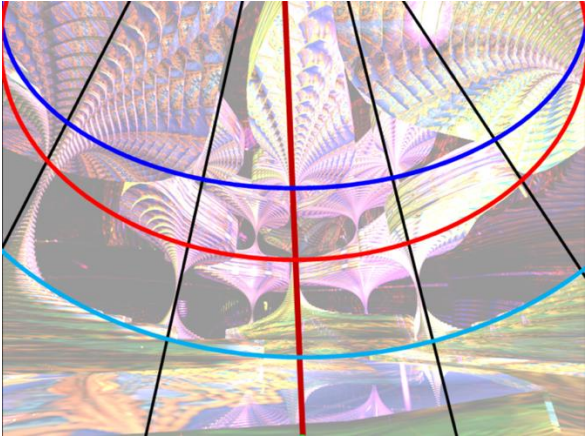
The Third Artwork

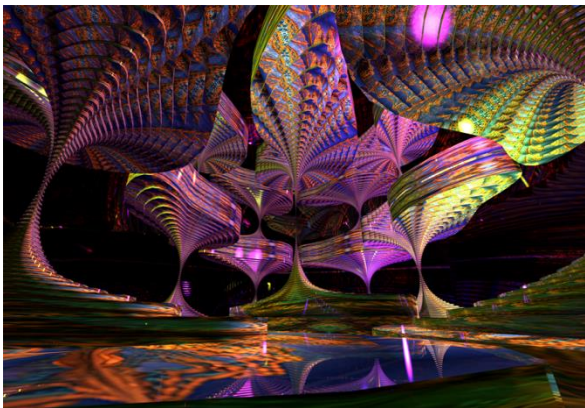
Analysis of the design artwork of the surface treatment of the construction

	<p>The model (integer power) was selected from the software due to its superior handling of organic details and its ability to accurately reproduce shapes during zooming and penetration processes. As the shape is expanded, it generates soft shapes inspired by the main form, showcasing a unique feature of these models within this program. The entrance dimensions were 30 cm by 40 cm.</p>	Portal shot selection	
	<p>The degree of clarity of the entrance was 1920 x 1440 pixels, and the reason for the high degree of clarity is that it will help the researcher later in the work of the (material) or cover the formal single of the final form after that, at first the movement was around the model (Integer Power) and then it was approached and entered into it more and more, as one of the characteristics of the program is that it provides a sample of smart models that the program processes (simulations)) purely arithmetic to solve the growth and reproduction of the elements of the shape during the process of zooming in and wandering in and around the shape, until the current shot was reached. Where the paths of the elements varied and the colors reverberated indirectly in achieving the rhythm, in addition to that the colors of the shot were processed through the program as well .</p>	Portal shot preparation stage	
	<p>After completing the selection of the formal entrance snapshot, it was processed by inserting it into the geometric retinal system, where the formal entrance shot was repeated inside the retinal cells, where the researcher used in this entrance the composite retina, in which he relied on merging the square cell with the triangle.</p> <p>In some cells, the shot is fully used, and in some cells, such as triangular cells, the dimensions of the main entrance shot (SKEW) are misrepresented, through which the measurement of one side is distorted in one figure.</p> <p>Through deletion, elongation, zoom, zoom in and overlay, the current formal entrance was processed within the geometric retina, so the scene progressed three paths that were basically a square geometric network, which was then treated by distorting its dimensions until its sides became soft lines as in the form and then overlaid on the basic shape network again.</p>	The stage of building the Grid of the Portal	Stages of analysis of the design treatment of the unit "organic Shape"

The Second Artwork				
Model Structural Object Analysis				
	<p>The organic shape has dimensions measuring 71x32x11 cm, taken from its farthest points in length, width, and height. A smooth, glaze-like texture was selected to highlight the curves of the organic form through the interplay of light, creating indirect reflections that enhance the artwork's rhythm and unity. The non-transparent nature ensures a clear view of the formal entrance and prevents overlapping objects from obscuring it.</p>	The shape of the Object used	Stages of analysis of the Object used in the First Artwork	
	<p>The shape of the formal Object resulted as a result of drawing a free organic space by placing several points on the organic line, then the line was processed by moving and changing the position of the points placed on the organic line more than once until the organic shape in front of us was formed.</p> <p>Then a height was placed for the organic form by repeating the organic form twice on top of each other and connecting them by connecting the points that were placed on the organic line</p>	Analysis of the Object		
	<p>The upper view represents the area of the depicted organic form. At the same time, the left and front views illustrate the height and the number of lines that contribute to the smoothness of the object's features. There are 256 surfaces surrounding the organic shape, formed by dividing it with 128 longitudinal lines that link the points on the line created by the repeated shape of the object. By increasing the number of divisions along the object's height, the sides will have a smoother surface through adding more points to the repetitive organic shape, thereby increasing the number of connecting sides.</p>	Analysis of the projections of the Object		
The Third Artwork				
Analysis of the Second form of the formal Object "organic form"				

	<p>A vertical main axis was designed to serve as a pathway for repeating the formal object. The selection of a straight horizontal geometric axis was intentional; this shape doesn't depend on the curves of the axis to accentuate the aesthetics and details of the final design. Instead, the focus is on the individual shape and its entrance retina, and how these elements are incorporated into the overall composition.</p>	<p>Axis construction stage</p>	<p>Stages of building the formal formulation of the third model</p>
 	<p>The formal object was replicated along the geometric horizontal axis, arranged from largest to smallest, ensuring its center aligned with the straight axis line. This repetition continued until there were 155 instances of the formal object along the axis. As the objects were repeated upwards, their size progressively decreased. Consequently, a new hierarchical shape emerged upon completing this process. This newly formed shape was then mirrored horizontally along the x-axis below, effectively complementing the original shape, as illustrated in the figure.</p>	<p>The stage of placing the formal Object on the axes</p>	
	<p>While replicating the shape, utmost care was taken to ensure a contact relationship between the two forms, preventing any overlap of the formal object. The shape was then repeated multiple times in various directions with adjustments in size. This process aimed to complete the rhythm of the new organic form while preserving its artistic aesthetics by maintaining the diverse curves of the shape. Additionally, the flow of the organic form was reviewed for succession and sequence, which facilitates diversity in scene selection.</p>	<p>Completion Stage of formal formulation construction</p>	

e Third Artwork			
Analysis of the Third artwork in the light of the foundations and elements of design			
		<p>The rhythm was evident in the chanting of the axes in the painting, where circular axes passed through parts of the figure in the scene. The blue axis traversed from above with a series of large formal objects at the top of the scene.</p> <p>Meanwhile, the red axis intersected with the smaller formal object at the top of the panel, showing the sequential movement of structural axes, where the formal object size decreased progressively.</p> <p>The turquoise axis cut through the mass of formal objects at the bottom, also displaying the sequential movement of structural axes within the painting.</p> <p>A third straight red axis ran through the middle of the repeated structural geometric axes on the panel, acting as the main axis and providing balance to the shape.</p> <p>Additionally, diagonal black sublimes in the painting indicated the eye's direction and the distribution pathway of the formal objects within the composition.</p>	<p>Analysis of the axes of the construction of formal formulation</p> <p>Analysis of the formal formulation of the Third artwork</p>

The Third Artwork			
analyzing the Third artwork in light of the foundations and elements of design			
	<p>The sphere of light encircling the figure in this painting has diminished its radiance, and the object at the top of the figure currently obscures the direct white light. A chromatic rhythm emerges through the presence of blue, which is echoed throughout the painting in subtle reflections on the object's surfaces.</p> <p>Light emanates from both inside and slightly outside the shape, with faint red light reflecting along the main axes of, and within, the shape Tara. The rhythm also manifests in the distribution of soft white light from the ball enclosed within the shape, lending a level of gloss to the letters of the monochromatic form.</p> <p>Additionally, the variation in sizes and dimensions between elements within the perspective frame captured by the lens creates a sense of proportion and unity in the artwork. The reflection of green and white light outside the figure enhances the glossiness of the figure's borders.</p> <p>Moreover, balance is evident in the arrangement of formal object around the painting's main axis. The shape's reflection within the concave backdrop mirrors repetitions of the form and lighting at the top of the painting, thereby enhancing the piece's rhythm and cohesion.</p>		
	Analysis of formal formulation through the foundations of design		
	Continue analyzing the formal formulation of the Third artwork		

Recommendations

Based on the study's findings, the researcher made several recommendations for design:

1. Gain in-depth technical knowledge to enhance students' visual creativity and design inspiration.
2. Establish communication between all artistic fields to foster innovative creations and broaden perspectives of art teachers and students.
3. Apply current research results to future studies using computer programs in design formulations.
4. Encourage students to experiment with analyzing three- and two-dimensional geometric shapes.
5. Focus on basic geometric shapes like circles, triangles, and squares to discover diverse design solutions.

Results:

One of the most important results of the current research is that it was concluded that there are aesthetics in three-dimensional organic bodies, and a relationship was found with Mandelblit algorithms to enrich the design.

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Abstract

- [14] **The Aesthetics in Three Dimensional Organic Objects Within Relation to Mandelbulb Algorithms to Enrich Design**
- [15] **Research problem:** The effectiveness of Aesthetics in Three Dimensional Organic Objects Within Relation to Mandelbulb Algorithms to Enrich Design.
- [16] **Objectives:** Disclosure of The Aesthetics in Three Dimensional Organic Objects Within Relation to Mandelbulb Algorithms to Enrich Design
- [17] **Hypothesis:** There is a positive relationship between The Aesthetics in Three Dimensional Organic Objects Within Relation to Mandelbulb Algorithms and Enrich Design
- [18] **Research Methodology:** The current research methodology falls within the experimental methodology.
- The most important results:**
- [19] One of the most important results of the current research is that it was concluded that there are aesthetics in three-dimensional organic bodies, and a relationship was found with Mandelblit algorithms to enrich the design.