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DIVERSITY OF DIGITAL TECHNOLOGIES IN CONTEMPORARY ART

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Abstract:

The purpose of this paper is to identify diversity of digital technologies in contemporary art. The current research community consists of (50) fifty models of digital artworks produced by contemporary digital artists. After the sample models were classified according to digital techniques, for the purpose of achieving the goal of the research, (5) models were chosen in an intentional manner. This is due to a number of reasons, including the diversity of digital technologies among the selected models, the suitability of the research sample forms to the content of the study, and taking into account the distribution of models within the years of the research limits. The researchers also used the descriptive approach (content analysis method) as it fits with the nature of the current research. the results we obtained was to employment of the computer in contemporary digital art has brought about important changes in the technical manifestations of the digital form, and its tools, including brushes, colors and virtual effects, which provided the digital artist with opportunities to produce various formal characteristics and in turn enriched the digital achievement to enhance the culture of creativity and innovation. As well as digital artist benefited from the technical treatment

brought by computer programs, to achieve aesthetic characteristics that support digital forms and to show them at a unique technical level.

Research problem:

The technological revolution, which began with great prosperity in the second half of the twentieth century, is one of the most important results of the great development of human consciousness and thought, and it is the fruit of hard work and effort exerted by man throughout his career to advance his civilization to the highest levels revolution.

The computer has effectively embodied an important stage of the accelerating progress of human civilization, as the numerous digital technologies have entered most areas of life, which has created great controversy due to the rapid development of these technologies and their complement and cancellation of one another, to provide advantages and possibilities that go beyond what they provided. The previous technology and its development complemented what was lacking in the previous one, bringing about fundamental and major changes in it, as is the case with digital art and what it contains overlapping and rapidly developing techniques, as digital art is based on the adoption of the computer as a direct and main means in the production of artwork, in whole or in part, so that digital technologies work as new artistic techniques that give the artwork the aspects and characteristics that any technology gives it to her product.

Digital plastic art is based on technical structures that draw the features of that art through the relationship between the aesthetics of artistic production and the techniques used to produce it. This creates a kind of controversy regarding the suitability of the techniques offered by the techniques to the need of the work and what the artist wishes to achieve through them. The research problem emerged by answering the following question: What is the nature of diversity in digital technologies used in the production of contemporary artistic works?

Research importance:

- Focusing on how to employ the diversity of digital technologies in contemporary art.
- It benefits art students and artists who work on computers and the various technical treatments associated with it.
- The current research is concerned with addressing the nature of the relationship between art and digital knowledge technology at the aesthetic level.

Research objective:

- The research aims to identify the diversity of digital technologies in contemporary art

Research field:

- Objective field: The research deals with the study of the diversity of digital technologies in contemporary art.
- Time field: (2011-2020)
- Spatial field: the United States and Europe.

Theoretical framework:

Digital technologies: concept and types:

Progress is the phenomenon associated with technology and the history of technology and progress as parallel[1] .they represent the movement of development that the world is witnessing, and digital art is one of the important examples of this great technological development that has taken great strides, especially in the last fifty years after being crowned with a computer, which in turn opened a wide field to the most difficult and complex details of the technology. One of the new concepts that were not effective in the technologies. Traditional art, these themes to the theme individualist artwork, the best of the known role of individuality in the artwork is (Walter Benjamin), in his article (work of art at the time of re-mechanical production (The Work of Art in the Age of Mechanical Reproduction)Where much attention has been focused on the perception that the distinctiveness of the work has to do with its individuality [2], which is directly related to what digital technology provides from the possibility of reproducing the digital artwork in an unlimited number and matching in which it can be said that it is absolute, which sparked a wave Of the questions about the originality and individuality of the digital artwork, but the topic was answered on the basis that the digital artwork carries its value in the creation and composition of the work, regardless of the possibility of its multiplicity of production.

Digital art techniques have a high possibility of similar appearance to many traditional techniques, so it is difficult to say that this work was done digitally or what degree digital tools played in the production of artwork

Art is based on the basis of the artist's selection of the subject and the mechanism of its presentation. Art in this sense depends on the presence of many tests in the situation, and one has to choose between them [3]. Techniques, both traditional and digital, and this effect on the subtraction varies from one technology to another, and the activation of this effect varies from one artist to another. For the idea of work and for the practical side of the technology among the most important digital art techniques:

- **Digital Collage[4]**
  The term collage is the technique used in making images consisting of cut papers, photographs and some materials glued to a surface in combination with its colouredparts. The origin of this technique goes back to the traditional collage technique, which means pasting, where it is based on assembling manufactured shapes, and found on a piece of cloth prepared for drawing, to be a new work of art, and the first to use this technique in his oil works is(Georges Braque) and (Pablo Becarso), when glueing a piece oval canvas tarpaulin chair on a piece of oil cloth, industrial, where these contain oily widget images reproduced

photographic column of the chair, has been framed work with a piece of rope and that similarity to give the pots used in parisian cafés, as show in figure (1).As for the digital collage technique, it emphasizes the investment of modern technological tools in the fields of computers, such as a digital camera and a scanner, to insert images and convert them into digital format, so that the artist can later cut and paste them together again by a world where the artist is created to employ shapes according to the digital program Specific [5] as show in figure (2).

Fig.1 show traditional collage.

Fig.2 show digital collage.

- **Digital Montage:**
This technology is a development to the digital collage technology, and what happened to this technology is its investment in the same modern technological tools that were employed by the digital collage technology, but what is new in this technology is the intellectual developments that the world has witnessed in addition to the scientific and technological developments, which confirmed its production of an integrated structure. What created a new situation in the process of producing artworks, "Digital montage combines images from at least two sources to produce an integrated result and an image that does not indicate that it was formed from several sources and elements" [6].as show in Figure (3) .

- **Digital Imaging:**
Digital imaging technology is based on the process of converting the image into digital data, ones and zeros that can be stored, processed and sent by computers [7].Digital photography is an emerging art form that applies traditional painting techniques such as watercolors, oil colors, impasto, and other imaging techniques

using digital tools via a computer, digitizing tablet, stylus pens, and software with a physical medium rather than more modern media such as digital media. Digital photography differs from other digital art, especially computer-generated art, because it is not related to the type or model of computer, and the artist uses drawing techniques to create digital photography directly on the computer [8], as show in Figure (4).

- **Technique Fractal:**
It is defined as "a very small irregular geometric part of infinitely small dimensions, consisting of similar parts composed in turn of parts similar to the mother, and it is characterized as a rough geometric object irregular at all levels and can be represented by a process of breaking into smaller parts, but these parts resemble the body The original" [9].

The fractal technique has its roots in mathematics. Over the years, the concept of fractals has been referred to as a formal course of published works, "beginning with the concepts of self-recalling and then turning to a rigorous mathematical treatment of the concept of continuous study, but it is not a derivable function in the nineteenth century. And to the formulation of the word (Fractal) in the twentieth century, and with prosperity and interest, fractal technology and computer-based modeling developed in the twenty-first century" [9], as show in Figure (5).

The fractal consists of two types, the first (regular fractal) and it is characterized by the characteristic of self-similarity, "that is, a part of the fractal shape resembles the whole shape, and the second (irregular fractal), which is a random fractal characterized by the property of statistical similarity, as part of the shape is similar in Statistics of the same figure [10]

Fig.3 show the Digital Montage

Fig.4 show the Digital Imaging

Fig.5 show the technique Fractal

Contemporary world art digital control:

What paved the way for innovation in contemporary art, according to (Walter Benjamin)* is Perte de I Aura, the demise of the cult of sanctification for artwork, one of the most important approaches to contemporary art. And the replacement of new categories such as automated production, automatic writing, and repeated copying, as a result of the emergence of photographic techniques[11].

Therefore, technology is the main material for contemporary art, as the artistic response to technology began to grow "from the festivity presented by Italian Futurism to the satire created by the Dadaist Marcel Duchamp" [12], where a transformation made plastic art in opposition with other arts. A change in the history of the arts paved the way for transforming the artwork from a fixed painting into a group of arts, not limited to drawing only, but also to the various cognitive neighborhoods [13].

Digital art in the modern era has become a phenomenon that has taken drawing to a new stage of art, in which contemporary technology, including (computer) has become an important element in the emergence and continuation of this art. And the trend towards a new type of drawing, he added to the digital painter the inevitability of acquiring another type of skills in the field of technical knowledge of the origins of digital drawing, as the computer has become the artist's tool and is the auxiliary element in the work. That the

artist's hand was used to express what is familiar in the real world in new ways" [14]. We cannot accept the claim of some after that as a competitor to the painter or is the one who completes the work. It is first and foremost a product of the human mind that created it to facilitate for him many aspects of his life, including the field of his artistic creativity. The alleged subjectivity, except in the light of an imaginary view that is steeped in pessimism or optimism, does not give weight to the influence of society on the type of scientific achievements that have been achieved in it."[15]

The computer is the main device in the process of producing digital works, and the digital work environment provided by the computer and through its accessories is an environment that provides the digital artist with the production of works of art. Ready-made inputs or enabling the artist to access the figure in its digital form so that he can deal with it, that is, there is a kind of mediation between the artwork and the artist, because this artwork is in a virtual format, and this handling varies from one technology to another and from devices to another, according to the suitability of their needs and according to the technical development [16].

Digital technology enabled the artist to use more than one type of paint brush, which was unattainable in traditional works, such as the use of two types of brushes such as the Airbrush pen and the pastel pen, where it was possible to quickly switch between two types of brushes and between two different colors [17]. Or any of the types of oil, water, or charcoal drawing tools and others in the same work Figure (6). Some Photoshop drawing programs have also given the artist the ability to create a brush himself when the artist transforms a photograph into a paintbrush that he uses in his painting. Among the most important digital works that were designed in Photoshop is the work of the ladybug, "I chose a work for the character of the ladybug, where he identified the archetype of a beetle, which the character consists of horns, lower jaw, tail shape and horny shield. The artist preserved the elements and the brush strokes were wide and bold, and the work ended in a silhouette that abandoned a certain amount. of control by assigning a low-level brush of random scattering by placing the brush of the program randomly" [18].

As well as the works of the artist (Jean Yvoral), which turned from his visual research to his interest in science, as a model of creativity through the precise use of the computer. The fragmentation of the Mona Lisa panel into geometric entities, which led to the reconstruction of the original panel [10], as shown in Figure (7).

Fig.6 show Oil pictures

Fig.7 show the Mona Lisa

The indicators that resulted from the theoretical framework:

- The computer is one of the most important contemporary technical tools that have brought about a new revolution in digital art, as it weaves for digital artists new threads of artistic creativity, because it expands the artist's ability to form, and forces him to think in an innovative way in the formation and generation of digital forms and enriching their aesthetic properties through software and what is It contains digital software tools.
- Technology is no longer just a practical application of science. Rather, it represents a philosophical position and logic and is also not a means in the artist's hand. Rather, it is tools and means that consolidate the logic of control, revealing the era of technological and technical advancement, and these technical developments led to transitions in the structure of contemporary art, and its forms. The heterogeneous in which multimedia was cut, the system of presentations and unconventional achievements, as well as the role of the recipient, and the change of interest in the standards of aesthetic taste to keep pace with all tastes.
- Digital art depends on computer technologies and advanced software to show new creativity and a different style within the space of the painting or digital artwork.
- Digital art techniques are divided into several techniques through which aesthetic diversity is achieved according to the vision of each artist and his choice of the appropriate technique to show digital work (digital collage technology, digital montage, digital imaging technology, and fractal technology).
- The fractal technique depends on the mathematical process set by the computer software, not the artist, to generate digital shapes and to show the fractal shape and its arithmetic properties, which is based on the technological possibility that changes ideas into visual forms to convey meaning to the recipient.

Research methodology and field procedures:

Research Methodology:

The researchers used the descriptive approach (content analysis method) as it fits with the nature of the current research.

Community and sample research:

The current research community consists of (50) fifty models of digital artworks produced by contemporary digital artists. After the sample models were classified according to digital techniques, for the purpose of achieving the goal of the research, (5) models were selected intentionally and for the following reasons.

- Diversity of digital technologies among the selected models.
- The suitability of the research sample forms to the content of the study.
- Taking into account the distribution of models within the years of the research limits.

Research tool:

In order to achieve the goal of the research, the researchers relied on the indicators of the theoretical framework as criteria in the analysis process.

Sample analysis:

Model (1)

Artist Name: Milo Vivers

Achievement Title: Coincidence

Ownership: Artist's Collection

Technique Type: Fractal Technique

Completion year: 2011

Fig.8 show Model (1)

General description of the model:

In this digital model, the artist used the spherical and oval stereoscopic shape, as single and different size, starting from the centre, spreading to reach vanishing degrees, and these sizes are wavy lines, which means the continuation of the movement

Analysis:

The work consists of a set of 3D fractal shapes, and the structural formula of the work resulted in a stereoscopic spherical oval character, and according to this method, the shift in the size of the spherical and oval items, which are stereoscopic, appears. This shift in sizes may depend on the wavy lines, in order to indicate On continuity and inspiring movement, achieving these stereoscopic linear relationships, where they meet and diverge in a repetitive manner that suits infinite extensions in all directions, and has formed an oval geometric shape, which appears with other ovals, the artist formulated the current work according to a state of balance in the distribution of this vocabulary Formalism and within the total space of the work, so the structural formula of the current work seems more connected with the length of the distance between the vocabulary on the one hand and the spatial formation of the faculty of composition on the other hand.

Model (2)

Artist Name: Takami, nakamoto. noemischipfer.kaunas Lithuania

Achievement Title: Technical Audio Installation

 Ownership: Kaunas Festival Lithuania

Technology Type: Digital Art :

Completion year: 2013

Fig.9 show Model (2)

General description of the model:

 A Daydream V2 audiovisual installation, the clipper distorts space and blurs the lines between the digital and the real. This display transports visitors to a new dimension, making visitors feel as if they are transporting themselves to another world. It is built on three main elements: "light, sound and movement". These elements are accompanied by the rhythm of the music. The lights are constantly flashing and pulsing, creating a unique atmosphere and 3D space.

Analysis:

The current achievement is an exemplary reinterpretation of imagining an ancient space with a contemporary technological vision, a collaboration between Nontak Studio and architect Noemi Schipfer, photographer and music architect Takami in Paris, in which they created a series of audiovisual installations, displaying them in multiple locations. They worked on showing two aspects of the work that are performance and installations and at some point they connect their computers, doing live ensemble work, starting work on crafting digital installations Nakamoto, with lighting and sound, and creating environments that resemble Takami's dream, a combined approach to space and sound and experience in visual movement, the compositions of the current work are distinctively immersive and engage on a sensory level.

model (3)

Artist name: Ralph Wiltz offer

Achievement Title: The Threshold of Ethics

Dimensions of achievement: open space

Ownership: Artist's Collection

Technology type: digital writing on the ground

Completion year: 2015

Fig.10 show model (3)

General description of the model:

This installation depicts an installation from a dark room. At first the text was projected onto the floor, and when the viewer reached space and the words were shadowed on the floor, then they were projected onto the wall instead of the floor. In order to understand the text the presentation was done in a multidisciplinary studio and digital techniques by using kinematics and projections.

Analysis:

The image and its archival existence is not based on its description through confirming identity, but rather its description was based on the game of difference. The prohibition of visual art is what determines the type of the image or how it appears as a subject in a place that is according to the description of the space from which the subject emerged, and this space varies according to the images and forms of visual art. The artist's work depends on digital art that is formed according to the presence of the recipient. The reflection of the image of the recipient's shape on the wall in the form of writing allows the formation of multiple images and follows it to the multiplicity of movement of the recipient, who tries to watch or receive the reflection of the light text on its shadow, so he reformulates reading the text parts, is as part of the moral representation that expresses the text.

The ethical question behind this artwork, addresses the ability to move and take action in a controversial society, so that the artist formulated this work in a way that invites the viewer to fully participate in the body and mind in reality, and the viewer had to move and perhaps extend his arms with other viewers and may Its form according to the phrase (what is legal is not always just, everything that is just is not always legal).

Model (4)

Artist name: Marcin Wagner

Completed Title: Mona Lisa My Selfie

Ownership: private collectibles

Technology Type: Digital Editing

Completion year: 2016

Fig.11 show Model (4)

General description of the model:

This model represents the technique of digital montage, where the artist portrayed the shape of the Mona Lisa by (Da Vinci), and she takes a personal picture in the mobile

device, and behind her appears the painting (Fermer) The Girl with the Pearl Earring, in the artistic text also appears the painting (Vincent Van Gogh), a starry night painting, Advar Munch's The Scream.

Analysis:

The artist worked on reformulating the production of works of art from previous eras, by employing it in line with the data of contemporary art, by using computer processing techniques and programs, using the technique of digital montage, where the painting begins with the Mona Lisa and the artist employed it as it represents an iconic and creative symbol, as he showed it The current work, with a new output and a different style from the original painting, through her mysterious smile while carrying a modern mobile phone to take a (selfie) picture, where the artist designed, processed and reproduced the shapes and pasted them inside (the phone). Behind her, the girl with a pearl earring appears, raising her hands and pointing to a sign Victory. As for Van Gogh's work, it reflected the clear and intertwined effect with Edvar Munch's The Scream. It relied on Photoshop to process it, giving the recipient a reflection that it was a similar painting in the technical technique of the two paintings.

Model (5)

Artist name: Genevieve Blaise

Completed Title: Mona Lisa puts a muzzle

Ownership: The artist's website on the World Wide Web and the Internet

Technology Type: Digital Collage

Completion year: 2020

Fig.12 show Model (4)

General description of the model:

The work is a picture of the Mona Lisa, which is the most famous work of the Italian artist da Vinci. It was reproduced in a contemporary digital style, as it appeared while she

was wearing the mask, and half of the face area disappeared behind him, as some of its details appeared camouflaged and unclear.

Analysis:

In this achievement, the artist (Genevive Blaise) made changes by reproducing the formulation of the iconic painting that belongs to the Renaissance. the face . To keep pace with the global trend in constantly wearing masks and masks to prevent the Covid 19 virus. The current work appeared with a new formulation and output, which made the final form have a presence in the formation of the digital artwork in which the digital technology worked by adopting the composite digital collage technology based on finding the opposite Through the process of deletion and addition in building the digital artwork in the implementation of the work, making the artwork a focus by installing the shape of the muzzle and hiding the most important characteristics of the painting, which was represented by its famous smile and content with the effects of the original painting for which the Mona Lisa was famous.

Results:

- The employment of the computer in digital art brought about important variables in the technical manifestations of the digital form, as it established an integrated system that contributed to the displacement of the historical values of plastic arts, and its tools, including brushes, colors and virtual effects, which provided the digital artist with opportunities to produce various formal characteristics, and in turn enriched the digital achievement. To promote a culture of creativity and innovation. As in the research sample forms.
- The digital artist benefited from the technical treatment brought by computer programs, to achieve aesthetic characteristics that support digital forms and to show them at a unique technical level.
- The motives of technical diversity vary semanticly in the research sample models whenever the justifications for visual attraction are achieved between the digital image and the recipient and the technical influences and media between them, according to the relationship of forms, ideas and semantic loads, so the diversity was based on the technical reproduction of the artwork, as in the models (1 , 3, 4, 5)
- The effectiveness of digital technologies includes the effective diversity in technical treatments and the specificity of the structural construction of visual formations through form, material and color media that are processed in special digital software, as in models (2, 3, 5)
- The technology of digital montage is characterized by the ability to reproduce new and contemporary works of art by combining international artistic images with a digital technological framework, allowing the recipient the opportunity to achieve shock and amazement.
- Digital diversity has been closely linked with the mechanisms of receiving in contemporary art productions, through the ability to reproduce works of art in a unique way, which varied in the nature of forms through their dependence on the graphic inputs of digital technologies, as in the models of the research sample.

- Digital technologies showed a formal diversity in the research sample models, and enhanced the technical media and software associated with the production of digital images, at the level of vision and structural style.

Conclusions and Recommendations:

Conclusions:

- The computer has contributed to realizing the ability of the contemporary digital artist to accomplish different digital techniques through the self-formal similarity between identical, virtual and random, using tools that were not available to a close extent... in terms of shifting from the physical to the virtual.
- The ability of the computer has displaced the historical context in the digital art industry in terms of techniques, which in turn provided a shift not only in digital art but also in its material, topics and techniques.
- Digital technologies were employed in the products of contemporary art in a semantic and symbolic manner, in addition to achieving expressive dimensions carried as ideas and topics that touch on the nature of technological transformation in the postmodern era.

Recommendations:

- Working to keep abreast of developments in the relationship between digital technologies and its software and contemporary formation, by conducting aesthetic research and studies that achieve knowledge goals that benefit those interested and specialists.
- Analyzing the frameworks of digital technologies introduced by digital software, especially in the field of processing digital forms, at the formal and content levels.

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