



The Big Bang Theory as an Input to Enrich Print Designs for Hanging Fabrics

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Abstract :

The study of the arts has been linked to nature, beauty, and muscles since the emergence of man on earth, then it was linked to scientific theories, mathematics, and numbers, Just as the Pythagoreans believe that all existents match the perfect number, and as physicists believe that the essence of scientific truth is linked to number, the construction of the view and its beauty is based on mathematical foundations, and when it succeeds On the importance of including plastic arts, sciences, knowledge, and the theories and laws it includes, and the connection between that and learning about that, and that knowledge is, by choice, knowledge and one should not move towards separating and classifying it, For thousands of years, scientists have been preoccupied with knowing how our universe was created and will be determined, Cosmology has emerged as one of the creative and wondrous sciences that is concerned with studying the origin and end of the universe, There are many theories about the origin of the universe, including the Big Bang theory, In 1950, George Jumbo assumed that the universe was in continuous linear expansion until it reached this great size and exploded 13.7 billion years ago, The current research provides innovative formulations and solutions by taking advantage of the Big Bang theory, To enrich print designs for hanging fabrics through thermal transfer printing

key words :- The Big Bang - Enriching Typographic Designs - Textile Suspension

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Research Background:-

The nature is the store of forms in which the activity of man since its inception and he is working hard to make natural materials suitable for his human needs and this process is the general condition necessary for the exchange of materials between man and nature, which is the permanent condition imposed by nature on human life, man controls things and makes them the property of his hands by converting them to suit human purposes and needs, but man does not only work, but dreams of controlling nature and being able to change things And formed in a new image, where he reached a high degree of development is no longer waiting for what nature gives, but has become increasingly imposed on it to provide him with what he wants, so he was able to design and innovate tools that did not exist in nature, and he was achieving this through art, art is a form of work that helps man in subordinating nature to his needs. [1]

When man relies on his senses to perceive nature, this is not achieved through direct surface vision familiar with the eye, ear or sense of touch only, but he has invented means that make him see more, including magnifying glasses, microscopes, and a telescope, where he was able to record images under the seabed and from above the moon, where accurate cameras record facts about nature above the level of the ability of the human senses, so it became to see nature and Study the number and machines to reveal the secrets of nature and see invisible beings. [2]

[1] - Yasser Suhail (2015): "Design in the fields of applied arts and architecture", Dar Al-Kitab Al-Hadith, p. 45 .

[2] Yasser Suhail (2015): (previous reference), p. 46.

We have great importance in our lives and throughout the ages, as there is no immortal activity with formal artistic immortality, and nothing remains from the past that equals it as much as it is a key to civil history. For thousands of years, we have been still drawing from immortal works of art our information about the customs and beliefs of the human race, and we have only used civil records. From a new time in world history.¹

From this we conclude that art is linked to all historical, scientific and other fields. The connection between science and art has an important place in the idea of common culture, as they both seek to build, and it is an intrinsic reality in each of them. If both the artist and the scientist seek to research a certain phenomenon, then something of the sequence of double giving takes its place between them in the succession of the system of influence and influence. Each of them affects and is affected by the other .

The study of the arts has been linked to nature, beauty, and harmony since the emergence of man on earth, and thus it has been linked to scientific theories, especially mathematics and numbers. Just as the Pythagoreans believe that all existents are arranged according to number, and just as physicists see that the essence of scientific truth is linked to number, the construction of shapes and their beauty is based on mathematical foundations, and when we talk about The importance of integration between the plastic arts, sciences, and knowledge, and the theories and laws they include, and the connection between this and meaningful learning, and that knowledge in its raw nature is connected knowledge that should not be separated.²

For thousands of years, scientists have been preoccupied with knowing how our universe originated and what its end will be. Cosmology has emerged as one of the creative and wondrous sciences that is concerned with studying the origin, development, and end of the universe, There have been many theories about the origin of the universe, including:-

The Theory of the Big Bang :-

1-

In 1950, George Gumbo assumed that the universe was in continuous linear expansion until it reached this great size and exploded 13.7 billion years ago.³

The current research presents innovative formulations and solutions by taking advantage of the Big Bang theory to enrich printing designs for hanging fabrics through thermal transfer printing.

Research problem:-

The problem can be formulated in the following question:-

How can we benefit from the Big Bang Theory as an input to enrich print designs for hanging fabrics?

Research importance :-

1- Benefiting from the Big Bang Theory in the field of textile printing design.

2-Deepening experimental and applied thought and employing them aesthetically as a contemporary approach to integrating the Big Bang theory and textile printing design.

¹ - Herbert Read (1985): "Art and Society", translated by Fath al-Bab Abdel Halim, p. 8.

²-Muhammad Hafez Al-Khouli, Muhammad Ahmed Salama (2016): "Islamic decorative designs between plastic concepts and scientific theories," for the International Scientific Conference: Art in Islamic Thought, organized by the College of Architecture and Islamic Arts/The International University of Islamic Sciences, the International Institute of Islamic Thought, and the Ministry of Culture. Jordanian

³ - Ahmed Sedqi (2019): "Astrophysics and the Universe (Foundations and Concepts)" Faculty of Science - Assiut University - Dar Al-Fajr for Publishing and Distribution, p. 66 .

-Discovering the aesthetic effects of thermal transfer printing.³

:-research aims

The following research aims to :-

- 1- Reaching a new creative approach by combining the Big Bang theory and structural systems for designing textile printing in general and hanging fabrics in particular.
- 2- Promoting design thinking by employing the artistic features of the Big Bang Theory to obtain innovative, unconventional designs for hanging fabrics that are characterized by novelty and modernity.
- 3- Supporting the experimental study by creating a set of designs for hanging fabrics based on the stages of the formation of the universe according to the Big Bang theory, with innovative artistic treatments

Research Methodology :-

1-The descriptive analytical approach: through the descriptive study of the Big Bang theory and the description of printing designs.

2-Experimental approach: This is through the researcher's own experience in creating designs derived from the Big Bang theory and implementing them in the form of suspensions using thermal transfer printing.

Research hypotheses :-

- 1-Finding creative formulations inspired by the Big Bang theory to create printing designs for hanging fabrics.
- 2-Taking advantage of thermal transfer printing to implement printing designs inspired by the Big Bang Theory.

:-search limits

The limits are limited to:

The Big Bang Theory.¹-

. Printing pendants²-

Creating printing designs inspired by the Big Bang theory using thermal transfer printing.³-

The research is limited to the researcher's personal experience.⁴-

:-Search terms

Pendants :

The hanging is everything that hangs from top to bottom, and what is meant in this study are fabrics with high artistic values that are designed for the purpose of completing the interior architecture for its functional purposes, by merging the aesthetic appearance of the hanging with its functional purpose.¹

the design :

By design in the arts, we mean creating beautiful things that are enjoyable and useful to humans, such as design in the production of some crafts such as textiles, printing, ceramics, and others, Design is the complete process of planning a form and creating it in a way that is satisfactory from a functional or

¹- Sayed Khalifa (1983): "Textile hangings in contemporary Egypt and inventing a modern method for implementing them," doctoral dissertation (unpublished), Faculty of Applied Arts, Helwan University, Egypt, p.1.

utilitarian standpoint, and brings pleasure and satisfaction to the soul as well. This is considered the satisfaction of human needs in a utilitarian and aesthetic manner at the same time¹.

:the theory

The foreign term for the word theory indicates that it is derived from the Greek word (Theoria), meaning to realize. The traditional meaning of this term is that theory is a set of special rational knowledge that is linked methodically and logically. Theory is also a set of terms, definitions, and assumptions, which have a relationship with each other and which It proposes an organized vision of the phenomenon with the aim of presenting it and predicting its manifestations, that is, it sets a scientific explanation for a specific topic, which gives it a clear meaning in the mind.²

: -The Big Bang

The occurrence of the big bang led to the birth of space and time, and therefore this moment is the zero moment in the life of a universe that has no yesterday. The big bang occurred with two successive explosions: the first, the stronger, led to the formation of inflated quantum bubbles, one of which expanded to form the expanding, super cooled universe, and from here came the expression hot big bang.³

: -Previous studies

Study by Heba Abdel-Al Mahmoud Awad (2019)1-

Title: "Morphological structure in light of morphological theory as a source for three-dimensional designs"

This study links science and art, as this study dealt with research, analysis and experimentation with morphological structure in light of morphological theory as a source of three-dimensional designs and its relationship to design processes as a source of decorative designs with the aim of creating three-dimensional morphological structures that are useful in creating innovative designs based on special mathematical and engineering foundations. With 3D animated decorative designs.⁴

The study agrees with the results of the current study in: linking science and art

The study differs from the results of the current study in that: This study aims to find three-dimensional formal structures that are useful in creating innovative design buildings based on mathematical and engineering foundations for animated three-dimensional decorative designs .

Study by Hoda Abdel Aziz Muhammad Matar (2010)

2-

Title: "Genetic code systems in living organisms as a source for creating aesthetic formulations to enrich decorative design "

This study linked biology and the art of decorative design, as it dealt with genetic code systems in living organisms to reveal the foundations and structural and aesthetic patterns of the genetic code and to devise structural vocabulary and formulas that contribute to enriching decorative designs .

The study agrees with the results of the current study in: linking science and art

¹⁻ Ismail Shawqi (2010): "Design, its elements, and foundations in plastic art," Dar Al-Fajr for Publishing and Distribution, Egypt, p. 11.

²⁻ Kamel Muhammad Omran (2003: 2004): "Contemporary Social Schools," Part One, Damascus University Press, Syria, p. 11.

³ Adapted from Hani Rizk (2003): "A Brief History of the Universe: From the Big Bang to Human Cloning," first- edition, Dar Al-Fikr in Damascus, Syria, pp. 28: 29.

⁴ Heba Abdel-Al Mahmoud Awad (2019): "The structure of morphology in light of morphogenetic theory as a source for three-dimensional designs," PhD thesis, Faculty of Art Education, Helwan University, (unpublished), Egypt.

The study differs from the results of the current study in that: This study dealt with genetic code systems in living organisms and devised vocabulary and structural formulas that contribute to enriching decorative designs.¹

(3-Study by Hanan Taha Ahmed (2014

Title: "Benefiting from the phenomenon of black holes in creating printing posters".

This research aims to study the plastic and aesthetic values of the phenomenon of black holes in order to benefit from them in enriching printing pendants with innovative designs, as well as to benefit from the capabilities and characteristics of some hand printing methods by combining them to create innovative plastic formulations.²

The study agrees with the results of the current study in: linking scientific theories to the art of printing .

The study differs from the results of the current study in: This study deals with the phenomenon of black holes in the creation of printing comments .

Study by Reham Mohamed Abdel Salam (2022)4-

Title: "Quantitative Theory as an Input to Enrich Printing Designs for Hanging Fabrics"

This research aims at a new creative approach by combining quantitative theory and plastic structural systems for designing textile printing in general and hanging fabrics in particular.³

The study agrees with the results of the current study in: linking scientific theories to the art of printing.

The study differs from the results of the current study in: This study deals with quantitative theory as an input for enriching printing designs for hanging fabrics.

5-Study by Muhammad Ahmed Hafez Salama (2017)

Title: "The impact of scientific and plastic concepts on constructing decorative designs Islamic decorations as an example"

This research deals with the relationship between the arts and scientific theories through the constructivism and aesthetics of plastic design by presenting the scientific and mathematical dimension in various Islamic decorative designs. Integration between academic subjects is not limited to linking the arts with mathematics, natural sciences, and humanities only, but also with languages, The research points to the relationship between Islamic arts (designs) and mathematics on two levels. The first level deals with the relationship between the structure of Islamic plastic arts and scientific theories and their applications, It provides some models that can be applied in practical lessons in arts departments and colleges.⁴

¹- Hoda Abdel Aziz Mohamed Matar (2010): "Genetic code systems in living organisms as a source for creating aesthetic formulations to enrich decorative design," unpublished doctoral thesis, Faculty of Specific Education, Ain Shams University, Egypt.

² - Hanan Taha Ahmed (2014): "Benefiting from the phenomenon of black holes in creating print commentary," research published in the Journal of Specific Education Research, No. 23, Tanta University, Egypt.

³- Reham Mohamed Abdel Salam (2022): "Quantitative theory as an introduction to enriching printing designs for hanging fabrics ", research published in Heritage and Design Magazine , No. 9 , Helwan University, Egypt .

⁴ - Muhammad Ahmed Hafez Salama (2017): "The impact of scientific and plastic concepts on building decorative designs (Islamic decorations as an example)," published research, Journal of Arts, Literature, Humanities and Sociology, Emirates College of Educational Sciences, No. 14 .`

The study agrees with the results of the current study in: linking science and art The study **differs from the results of the current study in:** This study deals with the scientific and mathematical dimension in various Islamic decorative designs.

Theoretical:-

Since man was found on this earth, he has been wondering about the origin of things, the reasons for their formation, and how they were formed. One of the important and ancient questions that has occupied minds is the question related to the origin of the universe.

Throughout the ages, humans have remained fascinated by everything related to the origin of the universe and humans, and over the past few years, scientists have begun to find answers to some basic questions regarding the origin of the universe and its early development.¹

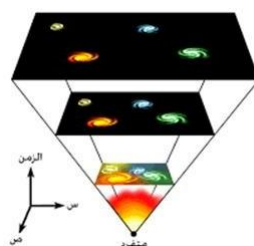
It is currently widely agreed that the universe in which we live emerged from a hot, intense fire called the Big Bang. In the late 1930s, technology discovered for the first time that our galaxy is just one island of stars located among many similar, scattered galaxies. Then they discovered that the groups of these galaxies are far apart from one another, as spaces are constantly diversifying. This theory of the expansion of the universe was proposed by Einstein's theory of general relativity, which was completed in 1916 AD.²

The Theory of the Big Bang

An acceptable picture describing the distant past of the universe has begun to crystallize from research conducted over the past few decades. In 1950, George Gumbo assumed that the universe was in continuous linear expansion until it reached this great size and exploded 13.7 billion years ago.³

The place where the big bang explosion occurred. The place where the system's big explosion occurred is the earth that embraces man, and from there this explosion began to extend its waves successively. He started with his living wave as his starting point, and he still carries the effects of this wave to this day. The explosion of the system did not cause a loud noise, nor did it emit tremendous heat.

What happened was a complete emergence of the neighborhood - as the first wave of the regime's explosion - away from the place formed by the activists' presence and abundance of movement in it (the body of the neighborhood), and it works well to emerge from it, in the process of changing the regime's relationship with existence.



Stages of the formation of the universe, Figure No(1)⁴

The time period of the Big Bang

¹- James E. Ledisi (2005): "The Big Bang," translated by Ezzat Amer, first edition, Supreme Council of Culture, Egypt, p. 11.

² - John Gribbin (2011): "The Story of the Universe," translated by Mustafa Ibrahim Fahmy: Second Edition, Arabic Words for Translation and Publishing, Egypt, p. 65.

³ - Adapted from Ahmed Sedqi (2019): "Astrophysics and the Universe (Foundations and Concepts)" Faculty of Science - Assiut University - Dar Al-Fajr for Publishing and Distribution, Egypt, p. 66 .

⁴ - <https://ar.wikipedia.org/wiki/> , today, Monday, 8/15/2023, time: 2.35 ,.

The occurrence of the great explosion of the system on Earth took place over a period of time, the first end of which can be determined by the completion of the episodes of the chain of animal evolution in which the system operates within, and the second end of which is formed by the appearance of man, complete with the elements that his body carried and which remain as they are until now.¹

Definition of the big bang

The birth of the universe with the big bang is a theory developed by mathematicians and astrophysicists as a hypothesis to explain the emergence of the universe. This hypothesis is now considered an established theory in scientific circles. According to the operative part of this theory, there was in the distant past, before time and space existed (that is, approximately thirteen billion years ago), a mass of energy or quantum, with a diameter of less than one millionth of a billion billion billionths of a centimeter. This quantum mass contained a gathering of quantum aggregates, strange, unfamiliar particles, and other strange antiparticles, which were formed and destroyed, and were subject only to the principle of uncertainty. Also, this previously mentioned quantum mass was extremely dense and extremely hot (its temperature exceeded the Planck temperature). Following the occurrence of the big bang in this mass, inflated quantum bubbles began to separate from it, leaking into the super-symmetric (homogeneous) and super-cooled surrounding vacuum. The force of inflation then grabbed one of these bubbles, and it expanded enormously (exceeding a billion billion times), and the speed of expansion exceeded the speed of light (i.e., more than 300,000 kilometers per second).

When the inflation stopped, the expanding inflatable ball (the seed of the primordial universe) released the excess energy, heating the void of the formed universe to a degree less than a hundred thousand billion billion kelvins, or an absolute degree (the Planck temperature). The release of the excess energy also occurred in the form of a massive explosion, but it was slower in speed and less intense than the first big bang. The four forces of nature were, at the time of the big bang, unified into one major force with a membrane-vesicular, stringy structure (but functionally disabled). These forces were then born gradually.

The occurrence of the big bang led to the birth of space and time, and therefore this moment is the zero moment in the life of a universe that has no yesterday. The universe was created by two successive explosions: the first, the stronger, led to the formation of inflated quantum bubbles, one of which expanded to form the expanding, supercooled universe, and from here came the term hot big bang (which is sometimes used).²

History of the Big Bang Theory

It is known that the various philosophies, starting with Sumerian and Babylonian mythology and ending with Marxism (passing through Pharaonic and Chinese beliefs and Greek writings, and finally monotheistic religions) developed similar formulas for the emergence of the universe and the creation of its planets. Most of these hypotheses emerged from studies, observations, and reflections, of a predominantly philosophical nature. With the advancement of the branches of physics, astronomy, and space science in general in the first third of this century, studies of cosmology (cosmology) began to take the form of scientific research, based on observation and measurement.

The first person to use the term "big bang" was the British physicist Fred Hoyle, who was working in World War II on developing radar, and who believed, in another context, that life came to Earth from an outer space meteor. Hoyle believes that the divergence of galaxies leads to the emergence of a vacuum, which is quickly filled with new galaxies, constantly formed from hydrogen that is created anew, which gives the universe an overall appearance that is fixed in space and time.

However, it was later possible to prove theoretically and experimentally that the hypothesis of the continuous emergence of galaxies from hydrogen was incorrect. The stability of Hoyle's universe disappeared, and

¹ - Adapted from Muhammad Yassin Al-Akhras (2011): "The Big Bang of the System, The Theory of All Things," first edition, Dar Al-Shafiq for Publishing and Distribution, Syria, Damascus, p. 84.

² Adapted from Hani Rizk (2003): "A Brief History of the Universe: From the Big Bang to Human Cloning," first edition, Dar Al-Fikr in Damascus, Syria, pp. 28: 29..

his expression "the big bang" remained. Herman Bondi assumed that the universe is expanding as a result of the divergence of galaxies, as Edwin Hubble had proposed in 1929.¹

Friedman (the mathematician and physicist) predicted in 1922, seven years before Hubble, that the universe is constantly expanding. He also found a solution to general relativity, excluding the cosmic constant and the antigravitational force. As for Gamov, he dealt with the issue of the big bang from a physical perspective, because he was not in agreement with mathematics. In 1949, Gamov assumed that the universe was, at its beginning, extraluminous, hyperdense, and ultraradiant. If this were the case, we must find in our days some remnant of this heat and this radiation. This temperature cooled, and this radiation disappeared (as a result of the divergence of galaxies), bringing the temperature to a degree close to 271 below zero.²

There is another researcher who contributed to consolidating the idea of the big bang, he is the Belgian priest (Georges Lemaitre). Lemaitre suggested that the universe (as well as time and space) was born from a massive explosion, which occurred in an primordial atom, in which matter was enormously compressed, and exploded due to unknown radioactivity. (Lemaitre's views may be corrected if we replace his primordial atom and its radioactivity with the quantum mass and quantum aggregate in which the big bang occurred).³

Scientists currently agree that the birth of the universe, as a result of the big bang, occurred in an infinitely small and extremely hot quantum mass (its temperature exceeds the "Planck" temperature).⁴

The relationship between science and art throughout the ages

In order to shed light in a focused manner on the influence of science on art, it is necessary to briefly review the most prominent historical scientific stations affecting the relationship between them throughout the ages, because culture and art are not immune from the repercussions of science on them, starting with Euclidean and ancient classical Pythagoreanism, which created the essence of Greek art with a striking reconciliation between art. Science, philosophy, and myth were in the Hellenistic style in that era, where art achieved, through Greek engineering and mathematics, a distinct creative state. Indeed, that reconciliation played an important role in establishing the components of the entire Greek civilizational achievement in that era.

Where science came carried by human levers and legendary imagination that revived creativity in all aspects of life, which made the Greek era with its achievements a fulcrum for subsequent European scientific and cultural achievements, especially the achievements of the Renaissance era in the fifteenth century, which followed the path of the Greek era, transcending the scientific and cultural slumber in which it fell. The European scene throughout the dark Middle Ages, which subjugated human thought, science, and art in favor of the authority of religious theology, until the Renaissance came to revive the Greek heritage to life again, and also restored reconciliation and harmony between science, religion, and other philosophical and human ideas, including art, so they all melted into one balanced compound.

It mixed Newtonian ideas in gravity and equilibrium mechanics and Galileo's astronomical and telescopic ideas, which aesthetic researchers consider the first historical breakthrough towards (man's ability to control physical phenomena to open the horizons of modernity). This came in parallel with the rational,

¹- Fred Hoyle: British space scientist and mathematician, born on June 24, 1915 in Bingley, West Yorkshire, Britain, and died in Bournemouth on August 20, 2001. He is considered one of the most prominent space scientists of the twentieth century.

²- Adapted from Hani Rizk (2003): (Ibid.) p. 29: 33

³ - Georges Lemaitre: He is an astronomer and a Catholic priest who proposed what was later called the Big Bang theory of the origin of the universe. He previously called it "the assumption of the primary atom. He was born on July 17, 1894 and died on June 20, 1966. He was of Belgian origin. He was a professor of physics and astronomy at the Catholic University in the city of Louvain.

⁴- Adapted from Hani Rizk (2003): (Ibid.) p.35.

applied and practical philosophical ideas of both Descartes and Bacon to form All of them are the essence of science, culture, and Renaissance art.

Later, starting from the Renaissance era, the scientific transformations carried by human levers continued to develop and accelerate in a positive and fruitful way without any abuse of religion and science over art in the artistic movements and schools throughout the following centuries until the beginning of the industrial revolution and the era of modernity in science and art at the end of the nineteenth century, when this witnessed The period witnessed new and decisive scientific developments, with its Einsteinian techno-nuclear stages (relative to Einstein), and ending with the contemporary electronic-digital era, whose rapid revolutionary developments we are experiencing to this day . ¹ This clash between science and art increased with the rapid rise of scientific discoveries in the last century, especially the revolutionary scientific discoveries made by Albert Einstein, which intensified the heated debate and conflicting opinions about the fate of contemporary culture and art, between opponents and supporters of the role of science in the entire Western cultural process. While opponents believe that the influence of science over art has eliminated the human, emotional aspects of it by transforming it into mere purely scientific mental processes, Supporters of science, on the other hand, see that science has a positive role that supports art, given that science constitutes a kind of inevitable revolutionary transformation in the life of contemporary people. It is inevitable to keep pace with it and deal with it in a creative spirit, through the positive use of that science because it is able to revive the artist's imagination and enable him to discover the spirit of art. The new era with its cultural, scientific and social components, Thus, how to employ science in artistic work has become a matter of interest to those who support it, A major axis of discussion and analysis of the role of science in art, rather than being limited to rejecting its role categorically, considering that the reflection of science on art and its employment has varied in different forms, methods, and patterns that have varied between negative and positive throughout the ages. This is because while science was misused and invested in serving human creativity in certain cases and eras, we find that in other eras it did not lose its humanity and its role in fertilizing artistic creativity due to the positive and fruitful interaction between science and art.

The relationship of science and art in our current era

In our current era, many studies have dealt with the relationship between science and art, as many artists have drawn many cells of the human body under the microscope, as well as cells of animals and plants, showing the aesthetic side of them. We also see the scientific and mathematical dimension in the various Islamic decorative designs, and mathematics has been linked to art. Islamic. Einstein linked science and art in his theories and terminology. When he wanted to express to us the relationship of time and space, he called them the fabric of the universe, which is known as space-time. This is because space-time resembles a piece of fabric that consists of warp threads and weft threads, In 1907, he requested Albert Einstein's doctorate from the University of Bern in Switzerland in 1907, and her response was that although Einstein put forward the theory of the good star in his article published in the journal (*Annalen der Physic*), the periodical of physics, she called his result related to it. With natural light and the important connection between time and space that lasts for a month, it has been pronounced more like the first child of art than the child of physics. After that, it was proven that Einstein's theory (the ideal theory) is correct, and this indicates to us that Einstein was not only a scientist, but also artists, as Dr. Mustafa Mahmoud said, that Einstein did not differ much from the abstract painter in his artistic adventure, Most of Einstein's equations were in fact an abstraction of reality in the form of numbers and mathematical terms. And a serious attempt on his part to defeat the familiar relationships of things and remove them so that glimpses of the amazing truth appear behind them.²

We also find that science has developed many programs on the computer and on the phone that are used in drawing and design, such as Photoshop and Illustrator, and it has become a large and broad field of advertising design and others.

¹ - Mazen Asfour (2019): (previous reference), p. 341.

² - Mustafa Mahmoud (1961): "Einstein and Relativity," first edition, Dar Al-Maaref, Egypt, pp. 10: 11.

The relationship between science and art is great, Each of them helps the other ,We can say that it is a relationship of mutual benefit between them .

The relationship between the design of printing presses and the Big Bang theory

The connection between cosmology and art, especially design, was made a long time ago by Galileo Galilei. He was the first to use a telescope to see the celestial dome and monitor the movement of stars and planets, in addition to confirming the Earth's rotation. These ideas and concepts proposed by Galileo overturned the rigid perceptions regarding the universe, celestial bodies, and their movement that had prevailed due to religious hegemony and suppression of knowledge in the Middle Ages, In particular, the issue of the stability of the Earth, its center, and its non-sphericity as a flat planet, as all of these perceptions were reflected in the artistic works of pictures, icons, and sculptures of the Middle Ages, to be characterized by immobility in movement and the flatness of space, in contrast to what Renaissance and Baroque artistic works began to be characterized by dynamism, movement, and perspective depth, after evidence. Galileo's telescope of the Earth's rotation and roundness and the active movement he observed in the universe, in addition to the concepts of the reflection of lights and their falling on objects as in celestial bodies, as well as what Galileo observed through his telescope From degrees of shadow and light, linear and aerial perspective dimensions, etc., these new scientific visions revealed by Galileo had to be invested in the works of Renaissance artists, where dynamism and active movement were evident in the lines, blocks, and human shapes in sculptures and images, in addition to employing the elements of shadow and light and round and oval shapes. In the artistic works of the geniuses of that era and its extensions, such as Da Vinci, Michelangelo, Caravaggio, and others.¹

Thus, science has achieved for art a creative, aesthetic and unique shift at the levels of both form and content, achieved by artists with a telescopic, analytical spirit and eye based on monitoring, analysis, and accuracy of scientific observation .

Thus, the extent of the balanced positive reflection and dialogue between art and science achieved by the scientist Galileo is clearly evident. We also see in the study of Muhammad Ahmed Hafez Salama (2017) the relationship between the arts, especially the relationship between the arts, especially the art of design, and scientific theories through the constructivism and aesthetics of plastic design by presenting the scientific dimension. And mathematics in various Islamic decorative designs. The research seeks to link art and scientific theories, especially the Big Bang theory, and how to employ this in constructing various designs and implementing them in the field of thermal transfer printing .² Thermal transfer printing is a technology used as a printing method in the industrial field that aims to print various fabrics made of synthetic fibers and their mixtures. This method depends on the use of some types of papers to serve as a carrier surface for the dispersed dyes that represent the designs to be printed on the fabric. Printing is also done with thermal transfer paper by Compressing the paper carrying the colored designs with dyes dispersed on the fabric at a temperature of 180 to 200 degrees Celsius using a compressor, and this is what we will do in this research by dealing with the Big Bang theory and understanding it and benefiting from the stages of the Big Bang in making printing designs suitable for making printing posters using printing technology, By thermal transfer .

Applied:-

The first artistic work:-

¹- Mazen Asfour (2019): "The Implications of Science on Art from Pythagoras to the Digital Revolution," Phenomenological Study, Volume 46, Issue 1, Supplement 2, Faculty of Arts and Design, University of Jordan, p. 345.

² - Muhammad Ahmed Hafez Salama (2017): "The impact of scientific and plastic concepts on building decorative designs (Islamic decorations as an example)," Journal of Arts, Literature, Humanities and Sociology, Emirates College of Educational Sciences, No. 14.



The work belongs to: The Big Bang Theory.

2- Design artwork area: (35 x 50 cm).

3- Tools used in the design: graphic programs (Photoshop - Illustrator). The design was applied to the fabric using thermal transfer printing technology.

4- Plastic aspects of the artwork: We notice in the artwork the repetition of units that connect the elements, creating a kind of emphasis, and we notice the diversity of colors.

5- Analysis of the artistic work:

This work expresses the beginning of the universe, as the universe was a small seed, which is the yellow circle that is located in the middle of the artwork. It represents the beginning of the universe, which is a seed the size of a pea and a mass of hot energy. Over the years, it exploded and bubbles of energy emerged from it. It expanded and exploded, forming the universe in several stages.

The second artistic work:-



1- The work belongs to: The Big Bang Theory.

2- Design artwork area: (35 x 50 cm).

3- Tools used in the design: graphic programs (Photoshop - Illustrator). The design was applied to the fabric using thermal transfer printing technology.

4- Plastic aspects of the artwork: We note that the artwork resembles the golden ratio or the shape of a shell, which consists of curved lines that give a sense of harmony, movement, and repetition of units that create an interconnection between the elements, in emphasis and variety of colors.

5- Analysis of the artistic work:

This work expresses the second explosion, where one of the bubbles expanded tremendously, and it is in the artwork the white circle on the right that explodes, forming the dark years, Then comes the stage of formation of the first stars, then galaxies are formed, which in the artwork are spiral shapes colored in different colors.

The third artistic work:-



1- The work belongs to : the Big Bang Theory.

2- Design artwork area: (35 x 50 cm).

3- Tools used in the design: graphic programs (Photoshop - Illustrator). The design was applied to the fabric using thermal transfer printing technology.

4- Plastic aspects of the artwork: We notice in the artwork the repetition of units that creates an interconnection between the elements, in emphasis and harmony of colors.

5- Analysis of the artistic work:

This work expresses the last stage in the Big Bang. After the second explosion, and after several stages of galaxy formation, the solar system was finally formed from planets, stars, and the orbits of the planets, as shown in the artwork.

The fourth artistic work:-



1- The work belongs to: The Big Bang Theory.

2- Design artwork area: (30 x 50 cm).

3- Tools used in the design: graphic programs (Photoshop - Illustrator). The design was applied to the fabric using thermal transfer printing technology.

4- Plastic aspects of the artwork: We notice in the artwork the repetition of units that connect the elements, creating a kind of emphasis, and we notice the diversity of colors.

5- Analysis of the artistic work:

This work expresses the first explosion of the universe, making up all the stages of the formation of the universe, where the universe was a small seed, which represents the beginning of the universe. It exploded, which was a seed the size of a pea, and a mass of hot energy, and bubbles of energy emerged from it and expanded. It exploded, forming the universe in several stages, and in this artwork we see the Latin numbers for the hour, as they indicate the beginning of time with the beginning of the universe.

The fifth artistic work:-



1- The work belongs to: the Big Bang Theory.

2- Design artwork area: (35 x 70 cm).

3- Tools used in the design: graphic programs (Photoshop - Illustrator). The design was applied to the fabric using thermal transfer printing technology.

4- Plastic aspects of the artwork: We notice in the artwork the repetition of units that creates an interconnection between the elements, the diversity of colors, and the harmony in the curved lines.

5- Analysis of the artistic work:

This work expresses the last stage in the Big Bang, which is the formation of galaxies and the solar system of planets and stars, and this was dealt with in an artistic way.

Results :-

1-Scientific theories enrich printing designs as a new creative approach to textile printing design.

2-)5(designs for printing wall hangings derived from the Big Bang theory were created using thermal transfer printing technology.

3- Using computer programs specialized in design to obtain innovative designs bearing a special and distinctive character for printed textile hangings.

Recommendations :-

1- The researcher recommends paying attention and researching scientific theories and linking them to art as a new entry point that enriches art in general and the art of printing pendants in particular.

2- Paying attention to computer programs specialized in design that serve scientific theories, and working to develop them, provide them, and benefit from them in the field of design to achieve the desired results.

3- The necessity of liberation from dealing with traditional topics in the field of arts in general and the field of textile printing in particular.

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