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Combining Hand Printing and Patchwork Techniques to Create Printed Artefacts Based on Natural Forms for Sustainable Development

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Abstract :

Inspiration from nature is one of the sources through which the industrial designer can watch and learn from nature and search through it for new ways to build products and access new sources of inspiration to design products with high efficiency, more durability and consume less energy and materials with nature, in addition to finding environmental design solutions by drawing inspiration from environmental forms, processes and systems to solve design problems and increaseSustainability in the design of products and materials used by humans and the environment. Since environmental aspects are important in designing sustainable products to be able to overcome the climate changes that occur in the world, this has led to an interest in teaching industrial designers how to adopt inspiration from nature as a source of innovative and sustainable design in the field of artwork by taking advantage of the perishable clothing industry patchwork in the work of contemporary art printed art derived from the forms of natural objects SuA (animals or birds) with the use of manual printing techniques and patchwork techniques, through designs characterized by aesthetic and artistic values, and therefore we have made several designs suitable for use in the printed workpiece inspired by the shapes of birds and animals in an abstract manner to achieve sustainable development, using manual printing techniques and patchwork techniques through the experimental descriptive approach, and one of the most important results we have reached, adapting the plastic capabilities of the remains of colored cloth from clothing factories and manual printing techniques And employing them in new plastic formulations that combine simplicity and modernity, whether in terms of prepared design or method of performance derived from the forms of nature to achieve sustainable development.

Keywords :

Hand printing techniques - patchwork techniques - printed works - natural shapes - sustainable development

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Introduction:

The artist records his feelings from the inspiration of his environment, and the artist's work is to recrystallize the form in nature from his point of view in order to achieve the rules of composition and aesthetics of the overall body of the artwork. And the feeling of enjoying watching that work is due to the aesthetic perception as a result of the sensations and

feelings raised by the work in the same recipient, each according to his aesthetic experience says Picasso:(In Bassiouni, 1986): "Man can not work against nature that it is stronger than the strongest human being, and it really benefits us to be in agreement with it and may allow ourselves some freedom, but this is only in differentiation")1(

Moore (1966) emphasizes the importance of nature in the creativity of the artist, saying: "I was able to discover the principles of form and rhythm from the study of things in nature such as pebbles, rocks, bones and trees, and the artist can expand the effects of his experience with the form by studying those groups that can not be counted of objects and rhythms that nature always abounds in")2(.The forms in nature are diverse and multiple elements and forms and increases their diversity different touching surfaces, which are the result of internal organizations, and structural structures of the elements.

Nature is the main source of the designer because it contains an infinite number of different design elements, such as lines, spaces, shapes, touches, colors, spaces, etc., as well as the foundations of design such as rhythm, diversity, balance, proportionality, symmetry, regularity and others, which nature is characterized by permanent change in its visual appearance according to what happens in the external variables, and despite the evolution and systems that occur in these elements, it is governed by the eternal law of nature for growth and change, all living organisms are governed by the natural law of growth and development This law is difficult to quantify, as it also reflects an integrated and regular visual system from which the designer extracts what he sees to express it with his own vision and technological means in his designs inspired by nature.)4(

Man by nature tends to order in his thinking and this sends in his mind a kind of satisfaction and calm, since his inception always seeks to order in various manifestations of nature and uses his innovative and artistic abilities to understand the different relationships of natural and cosmic phenomena around him, as he writes the habits of arrangement and organization between the assets in nature.

With development and industrial, economic and social activity, environmental pollution appeared. With the entry of industry and technology into all areas of life, represented by machines, devices, equipment and consumer goods, this led to a change in the lifestyle and its form, and thus the problems of environmental pollution increased, and that any product has a life cycle that ends with exhaust that must be disposed of, and this is done in several ways: Including the method of burning, which results in pollution. In the air, or by being buried in the soil, the soil is contaminated. Recycling is a way to move towards restoring the environment, and it is environmentally safe. If it is done at a low cost, it achieves the greatest benefit (Abu Saada, 2008). It was found that modern marketing studies are based on the investment process in the field of waste disposal, which is represented by Al-Dhahabi's law, which is the main axis of industrial ecology, through: reducing consumption, reusing and reusing, recycling, retrieving materials, repairing things with the aim of reusing them, and finally rethinking waste. The remaining waste is used to find and innovate new technology that helps benefit from this remaining waste, to achieve sustainable development (Al-Nowaihi 2004). The idea of recycling began during the First and Second World Wars, where countries were suffering from severe shortages in some basic materials such as rubber, which prompted them to collect those materials from waste and then reuse them, and years later the recycling process became one of the most important methods of waste disposal management for the many environmental benefits of this process, as dealt with a study (Park and Mr., 2008) with the aim of recycling the waste of the clothing industry from exhaust and remnants of factory fabrics , and auxiliary materials to reduce the cost and increase profits in the production of clothes and accessories that benefit members of society.

We find many scientific studies conducted in order to recycle jute fabrics and employ them in various uses in the field of art works and printed paintings to sustain contemporary works of art.

Therefore, the current research tended to take advantage of the remnants of factory fabrics, to put forward new future visions in the light of the new events and recent trends in thought and art. The process of studying and sorting the forms of fabric remains and the possibility of employing them by processing geometric spaces and the relationships between them to reach innovative forms is an attempt

to get out of the scope of traditional artwork to innovative forms in line with contemporary thought, and environmental raw materials have been able to fulfill unlimited roles in all areas of scientific and artistic human activities, where they had a lead and distinction over other raw materials. And arts, it is one of the most important means to move forward towards innovation and the development of traditional ideas into free ideas associated with experimentation in various materials, and one of the most important materials that can be used in artistic works is the remnants of fabrics because they are characterized by the following:

1- Richness of form and aesthetic value.

2- Economic importance.

3- The tactile and color richness of the diversity of fabrics as a result of the different weaving and printing processes.

4- Voluntary formation and employment.

Despite these features of the fabric material, it has not been improved to benefit from them so far in the field of added fabric, but it is often used by art students in a way to add a positive partial to a negative part (shape and floor). Nature to achieve sustainability.

Search problem:

The research problem is determined in:

How can manual printing techniques be combined with patchwork techniques to create a printed work based on natural forms to achieve sustainable development?

Questions include the following.

1- What are the aesthetic and plastic possibilities of patchwork art?

2- What are the different plastic capabilities of printing techniques in producing designs for printed artifacts?

3- What is the possibility of using natural units in making contemporary designs for printedartifacts?

4- How to benefit from the areas of sustainable development in printed crafts?

Research hypotheses:

1- Manual printing techniques and patchwork techniques can be combined to create printed crafts based on natural shapes to achieve sustainable development.

2- The possibility of benefiting from manual printing techniques in the development of contemporary printed crafts.

3- The possibility of benefiting from patchwork techniques in the development of printed artifacts.

4- The possibility of benefiting from the different forms of nature in the production of contemporary designs and employing them in the printedartifacts.

5- The possibility of benefiting from the axes of sustainable development in the production of new printed artifacts.

Research Objectives:

1- Benefiting from the remnants of fabrics in some small projects.

- Producing contemporary designs from textile residues as an experimental approach to enrich contemporary art printed artifacts.2

- Enriching the aesthetic aspect of the printed artifacts using the remnants of the factory fabric.3

4- Spreading national and cultural awareness among consumers of the importance of using the remnants of fabrics.

5- Emphasizing the importance of nature and its different forms and elements, which are implemented by combining manual printing techniques and patchwork techniques.

6- Freedom from the stereotypical vision imposed by the characteristics of style and printing pendants by achieving creative visions inspired by combining the plastic values of manual printing techniques and patchwork techniques and trying to express them in new plastic styles.

The importance of research :

1- Studying how to best use the remnants of fabrics to manufacture a contemporary art printed work.

2- The research is a starting point for several other research that contributes to enriching the technical field of manual printing, where the addition of

New expressive values and trends to address the plastic capabilities of patchwork techniques and manual printing techniques and employ them in innovative creative plastic methods that develop imagination and creativity among art education students.

Research Limitations:

Objective limits: - Identify the remnants of fabrics for factories and how to employ them in making designs suitable for artistic work.

- Innovative designs inspired by the forms of living creatures in nature such as birds and animals.

-Combining printing techniques with patchwork techniques.

- Achieving sustainable development.

Research Methodology:

The research follows the descriptive analytical approach:

This is represented by identifying the remains of different fabrics – and studying the forms of different living organisms such as birds and animals and how to use them in a contemporary abstract manner suitable for the designs of the executed printed artifacts.

Experimental Approach (Applied Technical):

Includes:

1- Study the different forms of living organisms found in nature.

2- The shapes of objects are modified into abstract designs in a new way.

3- Collecting the remnants of fabrics from factories and each cloth suitable for the implemented design is determined

4- Conducting various experiments on fabric materials.

5- Implementation of paintings that combine manual printing methods and patch work methods learned from the remains of fabrics and forms of natural organisms to achieve sustainable development.

Inductive approach: through previous studies and sources of knowledge

Search terms:

Fabric residues:

They are the waste and remnants of fabrics left over from textile and clothing factories, including various types of natural and industrial raw materials and those natural and industrial raw materials to be used (Enas Al-Sayed Al-Dridi - 2010).

Sustainable Development:

It is the development that meets the needs of the present generation without sacrificing or damaging the ability of future generations to meet their needs, and it is the constant pursuit of developing the quality of human life taking into account the capabilities of the ecosystem (Suad Abdullah-2003).

Twirling:

It is the process of recycling and recovering waste into new goods to reduce the impact on the environment .

Recycling:

It is the reuse of everything that is old and unexploited, and the idea of recycling began during the First and Second World Wars, where countries were suffering from severe shortages in some basic materials such as rubber, which prompted them to collect those materials from waste and then reuse them.(Hind Ahmed, Amna Shaher: 2020.

Previous studies:

1- **Study of Hanan Hosni Bashar, 1995: entitled (Applied Technical Study to take advantage of the remnants of fabrics to make decorations derived from the Pharaonic era for clothing and furnishings decorations**), the study aimed to enrich the technical and applied aspect in the field of artistic works using cloth material, and to study the possibility of some small industries to use the lost clothing and textile factories to produce handicrafts in the style of tents (added fabric).)5(

The study found the possibility of decorating many clothes and furnishings using some easy stitches in implementation, and the study confirmed the success of the idea of benefiting from the remnants of fabrics.

2- **Study (Enas El-Sayed Dridi-2010) entitled (Utilization of the remnants of fabrics for the production of children's toys (training program)** The study aims to design a training program for a sample of samples to produce children's toys from the remnants of fabrics to contribute to reducing unemployment among young graduates in addition to benefiting from the remnants of fabrics resulting from the textile industry The results of the study reached the implementation of a number of products, some of which are suitable as an educational means for children from (4-6) years, which were made from the remnants of Fabrics through a training program on a group of samples

3- **A study (Najd Ibrahim Madi-2008) entitled (Employing the remnants of fabrics in the work of innovative home furnishings)** "This study aims to operate industrial and household waste to reach an innovative product characterized by beauty and simplicity and the exploitation of those residues in preserving the environment has been possible to convert those residues into various products such as pillows - children's quilt has been arbitrated in terms of The foundations and elements of the design, the aesthetic aspect, the functional aspect, the economic aspect of the final product.

4 - **study (Helmy et al. - -2008) entitled (employing exhaust fabrics factories ready-made garments in the work of children's clothing for early childhood from the age of 2-5 years)** The study was interested in employing fabric exhaust factories ready-made garments in the work of children's clothing for early childhood from the age of 2-5 years, which leads to economic benefit from those exhausts, and from this point of view, this current study has sought the possibility of recycling the remnants and waste fabrics in the creation of new designs for clothes Children .

5- **A study (Afaf Kamal Mahmoud-2000) entitled (the possibility of obtaining new aesthetic and functional effects inspired by modern arts using the remnants of fabrics for children's products)** and the study aims to teach the possibility of obtaining new aesthetic and functional effects inspired by modern arts using the remnants of fabrics for children's products, where designs were proposed commensurate with the age stage of the child from the cradle to 5 years using the raw materials resulting from the quantitative production of ready-made clothing factories for the purpose of Employing the

remnants of fabrics and reaching the lowest economic cost, and the most important results were the existence of a statistically significant relationship between the type of material and the type of product, as well as achieving the equation between the low price and the aesthetic value of the advancement of the child's supplies industry.

6- **Study: (Iman Muhammad Tawfiq Al-Sukkari: 1989) Study Title :(Extracting geometric shapes from nature in printed** designs**)** In this study, the researcher has been exposed to nature by addressing the plant element, and its rich aesthetic and plastic values commensurate with its biological functions, with the aim of identifying the values and structural laws through vision Microscopic plant, utilizing them in and producing printed designs.

Comment on previous studies and locate the current study, including:

Previous studies agreed with the current study in the goal and try to reach a product that achieves quality in use and functional performance of exhaust as follows:

- Reduce exhaust (fabric residue) to a minimum.

- Optimal reuse of exhaust (fabric residues) with new scientific and technological solutions.

-Converting exhaust (fabric residues) into value-added products, consistent with the health and environmental conditions for human use, with a high degree of quality, and at low costs.

Procedural steps of the research:-

First: Theoretical Framework:

Includes:

Sustainable Development:

It is a term that refers to economic, environmental and social development that meets the needs of the present without compromising the ability of future generations to meet their needs, as well as the process of exploiting resources, directing investments to technological development and institutional changes that meet future needs next to current needs. Economic sustainability aims to increase economic efficiency, growth and job opportunities in the government sector, and social sustainability aims to support small enterprises and create job opportunities for the poor majority in the non-governmental sector. As for environmental sustainability, it seeks the sustainable use of natural resources to achieve economic growth in the public and private sectors (Kefaya Suleiman Ahmed, Samia Abdel Azim, Rabab Hassan Mohamed: 2007).

Nature:

Nature is considered the primary source for the designer because it contains an infinite number of different design elements, such as lines, spaces, shapes, textures, colors, spaces, etc., in addition to the foundations of design such as rhythm, diversity, balance, proportion, and symmetry. Regularity and other things characterized by continuous change. In their visible appearance, according to the changes that occur in external nature, and despite the development and systems that occur in these elements, they are subject to the eternal natural law of growth and change. All living organisms are subject to the natural law of growth and development, which makes it difficult to limit this law. It also reflects an integrated and regular visual system from which the designer extracts what he sees in order to express it with his own vision and technological means in his designs inspired by nature. Man, by nature, tends toward order in his thinking, and this brings to his mind a kind of comfort and calm. Since his early childhood, he has always sought order in various matters. Aspects of nature, he uses his creative and artistic abilities to understand

The various relationships of the natural and cosmic phenomena that exist around him, and he also writes down the habits of arrangement and organization among the things in nature.

Simulating nature:

Since ancient times, imitation of nature has been associated with art, and this appears in the diversity of forms that expressed and reflected man's connection with nature. We find animal drawings that had different meanings that helped develop the life of primitive man. It was known as a new science that studies models of nature and then imitates or is inspired by these. Designs and processes to solve human problems. Imitation here does not mean identical to the organism as it is in nature, but rather it means imitating the characteristics of living organisms in terms of environmental relationships and life stages. That is, it needs to be an imitation characterized by awareness and understanding of nature and its design capabilities, as imitation depends on structural systems, concepts and forms. The principles that shape nature and how to manage them and learn from them. The process of imitating nature either takes a direction that begins with studying and determining the behaviors and characteristics of an object or system in nature, and then identifying the possibilities that can be utilized in developing multiple design ideas, or it begins by defining the design problem, then searching in nature for solutions by observing environmental systems and organisms. Living, and benefiting from all previous studies and information, and the designer in the second direction often has difficulty in in-depth scientific understanding.

First: The external appearance of forms in nature:

The word body means a building based on a model that may have its own uniqueness or may be repeated. It is the existence of a meaningful building, and it is something that exists in space, such as a person or a tree. The form in the environment and natural bodies is linked to the three-dimensional external appearance in nature, where cells and bones are organized and gathered together in a general and orderly manner to form an integration and its parts are difficult to separate from the unified whole. The word form means a two-dimensional, flat existence, that is, devoid of anthropomorphism (Ismail, Doaa - 2015). . Understanding shape requires the designer to use performance skill in extracting shapes and design formulations from nature to design, identifying characteristics and coordinating them into lines and movements in his designs, resulting in this great diversity of external shapes of these systems.)10(

It is one of the most important characteristics that distinguishes between the total system of different forms. Since nature always has two aspects: an external form and an internal system, and the directions of searching for the different systems of form in nature include searching for the form of the parts and their relationships in the overall form, scientists agree that the differences between plants and the similarities between them are measurable and explainable to a large degree through the common characteristics of these plants. The artist-designer looks at nature with a different eye and the designer tries to search for the common systems that all objects in nature share. He is the one who participates in building most of the objects in nature, from the celestial galaxies to humans and plants, those mysterious things of bodies in nature. Art classifies nature into types of Various bodies such as the "Law of Spiral Growth.

Second: Design and the natural law of growth in nature and the transition to design:

Nature is a source of artistic inspiration, and controversy may arise about the extent of the availability of an automated mathematical system in the internal structures of plants, as there are in its internal structure relationships between spaces, lines, angles, arcs and internal formation, and the artist must extract these complex, interwoven relationships and translate them into mathematical systems, and here it is agreed. Cézanne saw in returning the elements of nature to their geometric mathematical origins, such as the cone, the sphere, and the cylinder. For example, growth within plant cells and formation in nature provides organized and organized shapes moving in space regularly, even though they appear irregular in general, but such as sea waves, sand dune shapes, cloud formation, and others, which are organized and arranged, the truth is that these appearances appear chaotic to the ordinary eye, but rather carry a rhythmic and linear system and its relationships. The plastic and artistic forms that the artist can reveal, so the designer extracts the design formulations of the elements, shapes, angles, relationships, proportions and sizes in nature into mathematical systems and formulations. He does not enter nature into a mathematical form, and if that happened, he would produce forms that are closer to engineering drawings than to works of art with a structural system. For spider web threads.

Therefore, its diversity and uniqueness had wisdom in its construction, and this is very important to observe in nature. Geometry for the artist-designer is not a purely schematic painting. The artist uses the basic mathematical functions that are built within the human body, such as the vertical axis and the horizontal axis. In addition to the natural concepts, there are forward and backward viewing angles. Aspects of structure and structural organization in the human body.The artist relies on the inner feeling to control natural bodies, and his feeling helps him in comparing shapes in nature. The designer feels the shape of the basic bodies to approximate the real shapes of trees and rocks. He tries to find basic working axes, and he uses mathematical shapes.

The concept of inspiration from nature:

Inspiration from nature is defined as "imitating the functional basis of biological forms, processes and systems to produce sustainable solutions." Therefore, inspiration from nature is considered a proposed guiding principle to be a qualitative shift in creative and problem-based learning necessary for education towards sustainability. Inspiration from nature has been classified into three levels:

- Visual inspiration: (living organism) in which the shape of living organisms in nature is inspired and thus used in creating aesthetic aspects in product design.

- Conceptual inspiration (behaviour): The behavior of living organisms is inspired by principles or processes found in nature, which helps in translating and applying them to building materials, shapes and design systems.

- Computational inspiration (ecosystem): Ecosystem inspiration is considered one of the most difficult inspiration processes, but it has the potential to revolutionize design, as the natural mechanisms of biological organisms are inspired by innovating the methods by which living organisms relate to ecosystems.)13(

The shearing waste resulting from ready-made clothing factories has not received sufficient attention, even though this trend is a civilized choice, in addition to the economic and environmental return, as the fabric waste resulting from ready-made clothing factories (from the interlocking and shearing processes) represents a maximum efficiency of 85%, but it can Benefiting from it by recycling cotton textile waste to produce low-quality cotton, using shredding machines consisting of two cylinders, each rotating in the opposite direction of the other, and equipped with screws to separate the longitudinal tissues from the transverse tissues of the fabric, but this type of cotton is used for the production of carpets and upholstery work.

Recycling leftover fabrics:

Recycling textiles and fabrics is known as the method through which we can benefit from old clothes, other textiles, and leftover fabrics by reusing them or reusing their materials, and it includes several steps for this, which are: donation, collection, manufacturing, processing, and then transfer to users, Recycling has many benefits for the environment; The pressure on landfills is reduced, and the treated textiles are made of synthetic fibers that do not decompose. Therefore, toxic substances are not produced, such as the process of decomposition of natural fibers, and through it pollution resulting from increased waste is avoided, and the demand for clothing dyes is reduced.

Tissue recycling is the most beneficial type of recycling, as it does not end up in a landfill. There are many companies that specialize in recycling leftover fabrics, worn and old clothes, and there are also sites specialized in that on the Internet. For example, there are efforts being made in the United Kingdom. Through companies specializing in fabric recycling, there is also great interest in this topic in India, and the Recycling Council estimates that there is approximately 5% of the waste in landfills, which is textiles of various types, such as cloth remnants, worn clothes, towels, and sheets, Note that the most important thing to take into consideration is that the fabric must be clean and dry when recycled; This is because wet pieces may rot and lead to damage to the rest of the pieces in the storage box.)18(

Dealing with different fabric remnants and experimenting with them to achieve compatibility and then harmony is not only an innovative artistic process, but rather its goal is compatibility when using more than one material and more than one color in a single piece. A study (Hanan Hosni, 1995) concluded the implementation of a group of innovative designs through the use of appliqué. (Khayamiya art) from leftover fabrics. The study (Sahar Al-Saeed, 1998) also aimed to identify the different plastic methods of leftover fabrics and use them in artistic works, and to reveal the plastic possibilities of leftover fabrics in terms of color, texture, and shape, and to benefit from them to produce innovative artistic works, which agreed with the goal of the current study of creating innovative home artistic artifacts. New shape from leftover fabric.

The art of using leftover fabrics should be done on the following grounds:

1- Paying attention to the dimensions of the artwork that is being implemented and its suitability for the place.

2- Paying attention to the colors and materials used.

3- Paying attention to the colors and materials used.

4- Attention to the design that will be implemented and work on development and renewal in it.

It is not necessary to have compatibility in colors, but the presence of contrast in many cases may lead to the production of good work if this use is based on taking into account the artistic taste and sense of colors, as well as the materials do not have to be the same, but the difference in texture and material enriches the work and gives it another artistic and aesthetic value.

The use of leftover fabrics gives an opportunity for renewal, innovation and production of things that cannot be repeated anywhere else, and here another value is given which is the value of uniqueness in owning a beautiful and useful work of art at the same time.

There are different types of this art from the following:

First**- The art of the Abalik:**

It is the art of embroidery in the style of added fabric, which is the decoration with the remains of fabrics contrary to the fabric to be embroidered or the same original cloth and this type of art is known as (Khayamiya), which is characterized by modified plant decorations and Islamic geometry, and this is evident in the case of using an added piece of fabric and be small in size sewn next to each other, it is known as mosaic as mentioned earlier.

The designer in the modern era was inspired by some plastic treatments developed from this method to beautify the surface of the artwork, as well as adding some artistic methods and various materials with various embroidery stitches as solutions that enrich the surface of the artwork.

Some artistic trends in the modern era use the technique of cutting and there are many features, patterns and styles, through which the methods of connection with knitting (patchwork) or embroidery always allow freedom of implementation, innovation and renewal, as some of these clippings can be used on the edges of curtains or tablecloths and around the bottom of jackets and pockets and along the shoulders and the end of the sleeves and the bottom of dresses, blouses or clothes that are worn on the upper part of the body, as well as furniture and upholstery using squares and rectangles of different sizes or any shapes Other engineering . (30)

And the use of the remains of colored textiles in the formulation and construction of some works such as the school of Kaabi as these scraps or the remains of textiles as complementary elements of the general artistic composition of the painting, next to the diversity of textures and special effects, has been used by Dadaism, a protest art movement resists old artistic concepts and art is characterized by a kind of humor and abstraction extreme.

So is the brutalist school that used this technique – especially in the work of Henry Matisse in a style that expresses his genius when compared to what the Takabis produced because of the strong character of Matisse's character.

Accordingly, what is meant by the use of the remnants of different fabrics structural compositions such as gentlemen, files, and lint, as well as non-woven fabrics in addition to knitted fabrics, which is experimentation that is characterized by innovative activity that helps the growth of thinking, innovative performance and fluency in formation, where experimentation is the most used words in educational activity and art education in particular, if the mechanism of art education scientists as a scientific entrance to innovative activity in the light of scientific progress and the standard approach that contributes to interaction Between science and art.

Combining pieces of different fabrics with each other gives a good starting point for an innovative artistic work, as experimentation in artistic work is considered an approach to thought that presents alternatives to different solutions in a new image that includes connotations and unfamiliar meaning. It is also a method that clarifies and defines the different aesthetic aspects of a single subject.

Innovation in artistic work occurs through practicing the experimental method, where originality is the focus of creativity and innovation in the innovative output in artistic work. Performing some movement arrangements in the prior design of the artwork, especially between shapes and spaces, such as exchange, grouping, linked organization, grouping, and organization by deletion, addition, etc., with the aim of revealing aspects and methods that have new connotations created through an unfamiliar vision of the basic relationships of the form of the artwork and creating harmony between colors, shapes, lines, and spaces. In a cohesive whole unit.

Second: recycling:

It is a method of recovering useful materials from waste by separating these materials, treating them, and then remanufacturing them. Among the most common things that are recycled are plastic, paper, cloth, iron, and aluminum. This is in addition to organic materials that can be recycled. Recycling achieves many economic and environmental benefits by recovering quantities of The waste was disposed of and used economically.

Third: Combining leftover fabrics to create artistic works:

It is the combination of different types of fabrics, whether (cotton - silk - wool - linen) or whether these fabrics are in different colors, according to the type of design. There are many types of combination and are divided into the following:

1- Synthesis with natural raw materials:

It is the synthesis of natural materials without interference that changes their natural form.

- Synthesis with natural raw materials in their form:

Nature is replete with an infinite number of forms, varying according to the different natural environments. For example, in the marine environment, there are rocks, sand, snails, shells, coral reefs in their many forms, and many other things, and the same is true in desert and agricultural environments.

- Synthesis with natural raw materials manufactured:

In this synthesis, natural raw materials that have been manufactured are used, which leads to a change in the natural form of the material, as a result of manufacturing processes. Cotton lines and textiles that have been manufactured from cotton and leather resulting from the processes of tanning animal skins with hair and fur. All of this explains the total difference between the natural material. Manufactured and in its original, natural form.

2- Synthesis with synthetic raw materials:

Synthetic materials mean organic compounds that have been chemically synthesized. Examples of these materials include plastic, nylon, synthetic rubber, polyester, and others.

- Synthesis of raw materials in their synthetic form:

These raw materials exist in the form of powders, pastes, or solutions, and when the artist shapes these raw materials, they take shapes that are consistent with the nature of the formation with them. They flow and collect in blocks of random shapes, and in organic shapes.

- Synthesis with synthetic raw materials manufactured:

In this type of synthesis, different raw materials are used in manufactured forms, such as threads, flakes, flats, blocks, or tubes of different diameters. Waste made of plastic, rubber, etc. may be used.

Thus, the various forms of wires, skewers, and rods suggest the possibility of bending and shaping them in space, and through them, movement can be embodied and the identity of space can be achieved, that is, kinetic interaction in space, and the entry of space into form and the formation of spatial relationships, which leads to the achievement of distinct plastic relationships.

Types of synthesis according to implementation methods:

Cutting and gluing - installation - assembly - writing - sewing.

Situations in which used clothes must be disposed of

There are some cases that may require disposal of used clothes. Here are some examples of such cases

-Severe damage: When clothes are severely damaged and unsuitable for wearing or repair, such as large holes, large tears, or permanent damage to the fabric, it may be better to get rid of them.

Inadequacy: If clothes do not fit you properly and cannot be easily modified to fit you, it may be better to get rid of them rather than keep them unused.

-Not in use: If clothes have been sitting in your closet for a long time without use and you do not intend to use them in the future, you can consider getting rid of them to free up space and reduce unnecessary gathering.

-Donate: If you want to dispose of used clothes responsibly and help others at the same time, you can consider donating them to charitable organizations or recycling centers provided by local communities.

It is important that you make sure to recycle and dispose of used clothes correctly and in accordance with sustainable environmental practices. There may be local recycling centers or collection services dedicated to properly collecting and recycling used clothing, so you can explore these options in your area.

By exploiting leftover fabrics, we can achieve many creative, economic and environmental benefits. We can make recycled shopping bags, renew old clothes, create home decor pieces, create unique jewelry and accessories, and even make soft toys. By utilizing leftover fabrics, we contribute to the preservation of natural resources, reduce waste, and recycle materials in an innovative and creative way. So, let's take advantage of leftover fabrics and create something new and useful out of them, promoting sustainability and creativity in our daily lives

Fourth: The art of patchwork:

It means collecting a group of woven or invisible materials in an attempt to fill the entire floor space. Rarely does any part of it appear, or the remaining pieces of fabric are used to create new designs. These pieces are of different sizes and colors, and are installed in several ways depending on the piece to be executed.

Printing methods and techniques:

The field of hand printing is considered one of the most exciting branches of the arts, as it combines multiple concepts and techniques, whether in terms of their value, artistic originality, or superior ability to create visual images with all their artistic and aesthetic values.

And the many methods included in this field, each of which has its own unique and wide plastic potential, which allows through continuous experimental practice of the techniques presented, through creative technical expertise. Experimental practices in the field of hand printing are considered one of the important modern intellectual trends that have long been emerging.

To it are researchers in this field, as technology is no longer static, but rather the hand of innovation is always working to bring about changes that keep pace with development and suit the requirements of the era, either by using new plastic formulations, modern artistic treatments, or by using synthetic media that can be created by combining treatments, traditional materials, and modern treatments.

Diversity between the different methods of artistic expression resulting from the diversity of methods and methods, and by developing the printing techniques themselves, or by combining the printing methods in one work, or by developing new performance methods for the tools and materials used, which leads to consolidating the artistic originality of the printed artwork despite the tremendous development in printing methods. However, manual printing still exists to this day, and represents a prominent position due to its high artistic value. It directly reflects the ability and artistic and aesthetic sense, and is considered a means of artistic expression using various methods that reflect wonderful artistic ideas that stimulate the imagination of the one who implements them, and they are rarely found in automated production widespread in the markets.

Manual methods for printing and dyeing fabrics and clothing:

There are many methods of printing and dyeing fabrics, including (stencil printing - block printing - printing and dyeing of knots and ties - batik - hand-printing polka dots - direct drawing on fabrics)

These methods help in obtaining diverse, different and appropriate designs in all fields, which enriches the fabrics used in clothing and artistic pendants, and opens the way for the designer of artistic works to create contemporary designs himself. Among these methods used in printing printed works, the current research deals with the implementation The following technologies:

Stencil printing:

The word “stencil” means preparing an area of cardboard, tarpaulin, plastic, or thin metal, placing the design on it, hollowing it out with scissors or a piece using a cutter, then applying it to the surface of the fabric and filling in the gaps by tapping on it. It is also possible to use a sponge in this technique. . Stencil printing methods include the spray or spray method and the vacuum method. The first method is considered one of the simplest “stencil” printing methods and is compatible with the available capabilities. This method is summed up in placing previously prepared elements and units, scraps of paper, keys, etc. on the surface of the fabric in Create specific distributions, then spray colors around and above these shapes using a simple spray tool . In the second method, which is the unpacking method, the design must be unpacked on water-resistant cardboard so that the edges or borders of the pieces are always dry. The printing material should not be absorbed or discharged onto foil or sheets, such as wax, calco paper coated with Duco varnish, or celluloid sheets, because the purpose of using these materials is to isolate the printing material from the printing surface.

Printing using templates

Manual molds are considered the first beginning of the printing process in its scientific sense, which is transferring the drawing or design to the surface of the material so that it takes a specific position using a suitable medium to transfer the color, so that it remains confined to the required positions and does not exceed them to others in a way that allows for repetition. The most famous types of molds used in textile printing are the lino mold and the wooden mold. The process of engraving the molds and printing on fabrics is carried out as shown in Figure .

Direct printing:

Direct drawing on fabrics is considered one of the means that helps in obtaining beautiful and multiple results. It is possible to draw and color on many materials (such as silk, chiffon, and light materials, and also drawing on heavy fabrics such as tulle, khayamiya fabric, and heavy cotton fabrics). As well as fabrics of medium weight and thickness, such as linen and cotton). , The design or drawing to be transferred is transferred onto the fabric using carbon or transferred via calque. A color plan is made to color the design or drawing, and fabric coloring colors found in libraries or printing pastes are used. After the colors dry completely, the piece is ironed to help fix it. The color is more on the fabric, and one of the first materials that was painted on was silk, as in the figure .

التطبيق العملى

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The first printed work:

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - corkboard - white glue - wax glue - colors - brushes - previously cut stencils

The method used in the artwork: cutting and pasting - patchwork - stencil printing.

Quote source: One of the forms of nature is the form of the butterfly. -

Description and analysis of the artwork:-

A hanging representing an artistic work executed in the patchwork style. It is a shape of a butterfly derived from the shapes of nature in an abstract style. The butterfly was made from the remains of patterned and plain satin fabrics, executed in a cut-and-paste style after collecting the leftover fabrics from factory remains. The parts of the butterfly were divided into several abstract geometric parts. Using harmonious, cheerful colors that suggest movement and activity. As for the proportion of the floor, it consists of stripes of geometric decorations derived from the decorations of Asiri art, distributed in a vertical and horizontal manner that suggests stability and constancy in the artistic work.

Second printed work:

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - cork board - white glue - wax glue - colors - brushes - previously cut stencils

The method used in the artwork: cutting and pasting - patchwork - stencil printing.

Quote source: One of the forms of nature is the form of (a bird).

Description and analysis of the artwork:

A hanging representing an artistic work, a shape of a bird derived from nature's shapes in an abstract style. The bird was made from the remains of plain cotton fabrics, executed using a cut-and-paste method after collecting the leftover fabrics from the remains of factory fabrics. The parts of the bird were divided into several abstract geometric parts using cheerful harmonious colors. It suggests movement and activity, as for the floor, it consists of geometric pieces colored in cyan and reddish-brown, colored with printing colors using stencil units.

The third printed work:

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - cork board - white glue - wax glue - colors - brushes - previously cut stencils

Method used in the artwork: cutting and pasting - patchwork - stencil printing - direct drawing -

Quote source: One of the forms of nature is the form of (a bird).

Description and analysis of the artwork:

A hanging representing an artistic work, which is the shape of a bird with various decorations and different colours, green, white, yellow, orange, cyan and grey, derived from nature's shapes in an abstract style. The bird was executed from the remains of plain cotton fabrics, executed using a cut-and-paste method after collecting the leftover fabrics from the remains of fabrics. Factories, and the parts of the bird were divided into several abstract geometric parts using harmonious, cheerful colors that suggest movement and activity. As for the floor, it consists of two parts, the upper part is decorations executed with ornate molding, while the lower part is the shape of a fish that was repeated in a horizontal style, executed by direct drawing in color. In reddish brown, lead and yellow.

The fourth printed work:

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - corkboard - white glue - wax glue - colors - brushes - previously divided stencils - colors

-The method used in the artwork: cutting and pasting - patchwork - stencil printing - direct drawing.

-Quote source: One of the forms of nature is the form of the stork.

Description and analysis of the artwork:

A pendant representing an artistic work, a shape of a stork with various decorations and different colours, blue, black, navy blue and cyan, derived from nature's shapes in an abstract style. The bird was made from the remains of plain cotton fabrics, executed using a cut-and-paste method after collecting the leftover fabrics from the remains of factory fabrics. The parts of the bird were divided into several abstract geometric parts using harmonious, cheerful colors that suggest movement and activity. As for the floor, it consists of several parts divided into several colors, orange, white, black, and cyan, which represent decorations executed by direct drawing with brushes of different sizes.

The fifth printed work

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - cork board - white glue - wax glue - colors - brushes.

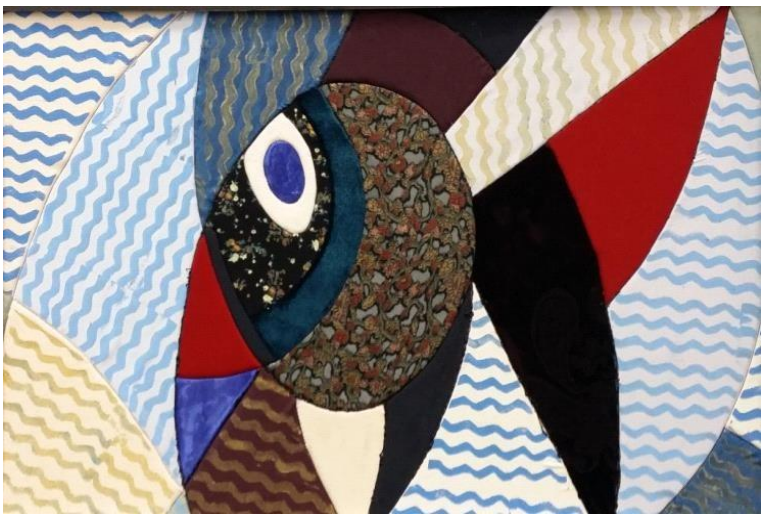
The method used in the artwork: cutting and pasting - patchwork - direct drawing.

Quote source: One of the forms of nature is a form (landscape - cat).

Description and analysis of the artwork:

A hanging representing an artistic work. It is a form of a scene from nature, with various decorations and different colours. It consists of the shape of a tree, greenery, a cat and the sky. It is executed in blue, black, navy blue, cyan, green and orange. It is derived from the forms of nature in an abstract style. The whole scene was executed from the remains of fabrics. Plain cotton was executed using the cut-and-paste method after collecting the leftover fabrics from the remains of factory fabrics. The parts of the natural scene were divided into several abstract parts using harmonious, cheerful colors that suggest movement and activity. The shapes of nature were decorated with various decorations in the style of direct drawing on the fabric. As for the floor, it consists of several parts divided into several colors. The orange and cyan colors are decorations executed by direct drawing with brushes of different sizes.

The sixth printed work:



- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - cork board - white glue - wax glue - colors - brushes - new molds - roll

The method used in the artwork: cutting and pasting - patchwork - printing with templates.

Quote source: One of the forms of nature is a form (a view from the bottom of the sea (fish)).

Description and analysis of the artwork:

A hanging representing an artistic work, which is the shape of a view of the seabed, including a large fish and sea waves. It was executed in the style of patchwork paper with the remains of various fabrics, whether plain or patterned fabric. The fish is executed in red, blue, black, and white with the patterned ornate fabric. As for the ground, it is derived from shapes and colors. Nature in an abstract style, and the floor was divided into sections of various sizes, and was colored with new templates showing the sea waves in dark and light blue colors. The whole scene was executed from leftover fabrics, such as plain cotton, executed using a cut-and-paste method after collecting leftover fabrics from factories and sewing workshops, using colors. Harmonious, cheerful, suggestive of movement and activity.

The seventh printed work:

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - cork board - white glue - wax glue - brushes - colors - stencils that were prepared previously.

-The method used in the artwork: cutting and pasting - patchwork - stencil printing.

-Quote source: One of the forms of nature is the form of (a natural scene (a bird on a tree branch)).

Description and analysis of the artwork:

A hanging representing an artistic work, which is the shape of a scene from nature showing the shape of a bird on a tree branch. It was executed in the style of patchwork paper with the remains of various fabrics, whether plain or patterned fabric, executed in black, white and yellow with patterned patterned fabric. As for the ground, it is derived from the shapes and colors of nature. In an abstract style, the floor was divided into two parts.The first part on the right is divided into several overlapping squares in white, yellow and brown alternately with the remains of the fabric, and the second part on the left is an area divided into several sections in green and was printed on it with a stencil unit that shows a branch of the tree in black colors. The whole view was executed from the remnants of plain cotton fabrics executed in the style of cutting and gluing after collecting the remnants of the fabrics from factories and sewing workshops.

The eighth printed work:

- Materials and tools used in the implementation of the work: remnants of fabrics from factories - remnants of used fabrics - previously selected design - scissors - cork board - white glue - wax glue - colors - brushes - colors - new molds - roll

-The method used in the artwork: cut and paste - patchwork - printing with templates.

-Quote source: A form of nature that illustrates (a natural landscape) a group of houses with decorations from Asir behind them (Saudi art)).

Description and analysis of the artwork:

A hanging representing an artistic work, which is the form of a scene from nature showing the shapes of houses of different sizes. It was executed in the style of patchwork paper with the remains of various fabrics, whether plain or patterned fabric, executed in red, yellow and black with patterned patterned fabric. As for the floor, it is derived from the shapes and colors of nature. In an abstract style that expresses the motifs of Saudi Asiri art, These decorations are executed in a vertical direction and were printed on using the newly developed molding unit. They were executed from the remains of plain cotton fabrics, executed using the cut-and-paste method after collecting the remains of the fabrics from factories and sewing workshops.

The ninth printed work:

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - cork board - white glue - wax glue - brushes - colors.

-The method used in the artwork: cutting and pasting - patchwork - printing by direct drawing.

Quote source: One of the forms of nature is the form of (animal)

Description and analysis of the artwork:

A hanging representing an artistic work, a form of an animal (polar bear). It was executed in the style of patchwork paper with the remains of various fabrics (plain cloth). It was executed in black, dark and light green, yellow, orange and blue. The shape was decorated with simple motifs from the special Asiri art motifs. The southern region in the Kingdom of Saudi Arabia. The entire shape was created from leftover plain cotton fabrics, executed using a cut-and-paste method after collecting leftover fabrics from factories and sewing workshops.

The tenth printed work:

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - corkboard - white glue - wax glue - colors - brushes - colors - stencils that were previously implemented.

Method used in artwork: cutting and pasting - patchwork - stencil printing - templates.

Quote source: One of the forms of nature is a form (landscape (composite form)).

Description and analysis of the artwork:

A hanging representing an artistic work, a composite form of nature, executed in the style of patchwork paper with the remains of various fabrics, whether plain or patterned fabric, executed in red with patterned patterned fabric. As for the floor, it is derived from the shapes and colors of nature in an abstract style that expresses Islamic motifs, and this The decorations are executed by stencil printing, made from leftover plain cotton fabrics, executed by cutting and pasting after collecting leftover fabrics from factories and sewing workshops and printing by direct drawing.

The eleventh printing work:

- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - cork board - white glue - wax glue - colors - brushes - colors - templates.

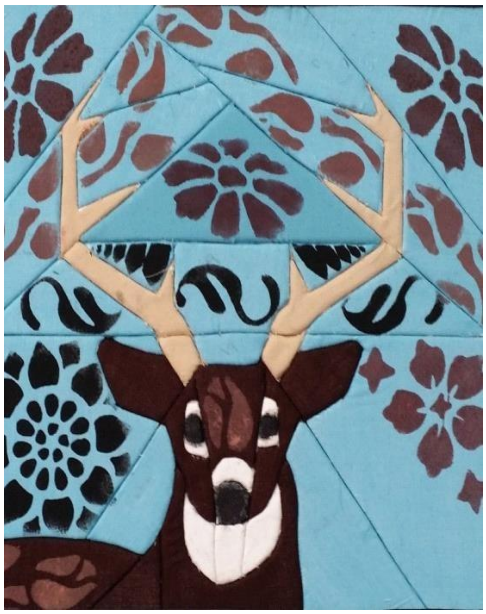
The method used in the artwork: cutting and pasting - patchwork - printing with templates - direct drawing.

Quote source: One of the forms of nature is a form (the form of a dog).

Description and analysis of the artwork:

A hanging representing an artistic work, a shape of a dog from nature, executed in the style of patchwork paper with the remains of various fabrics, whether plain or patterned, executed in brown with patterned fabric. As for the floor, in an abstract style, expressing Islamic motifs, these decorations are executed by printing in the section on templates and drawing. Direct, it was made from leftover plain cotton fabrics, executed using a cut-and-paste method after collecting leftover fabrics from factories and sewing workshops.

The twelfth printing work:



- Raw materials and tools used to carry out the work: leftover fabrics from factories - leftover fabrics used - previously chosen design - scissors - corkboard - white glue - wax glue - colors - brushes - colors - stencils that were previously implemented.

-The method used in the artwork: cutting and pasting - patchwork - stencil printing.

-Quote source: One of the forms of nature is a form (the form of a deer).

Description and analysis of the artwork:

A hanging representing an artistic work, which is the shape of a deer from nature, executed in the style of patchwork paper with the remains of various fabrics, whether plain or patterned fabric, executed in brown with patterned patterned fabric. As for the floor, in an abstract style that expresses Islamic decorations, and these decorations are executed by stencil printing, It was made from leftover plain cotton fabrics using a cut-and-paste method after collecting leftover fabrics from factories and sewing workshops.

Analyze and interpret results:

1- The artistic vision of the forms of nature and their analysis in terms of general shape, color and surface texture brings new plastic solutions.

2- The results of the practical applications of the research, which were inspired by the study and analysis of the internal and external forms of various forms of nature, showed the extent of the richness of these forms in formal systems and different expressive and aesthetic values.

3- The analytical study of the forms of living organisms in nature in an abstract manner enriches the innovative side and increases the creative abilities of the artist in inspiring plastic forms to address contemporary printed work.

4- The importance of deepening the concepts of aesthetic appreciation for forms in nature, and analyzing them in artistic ways that contribute to proposing multiple solutions in the artistic field, especially the field of artistic works and the field of textile printing.

5- Achieving plastic and aesthetic values of the aesthetics of natural shapes, formulated in an artistic way that combines spontaneity and intention by using the remnants of fabrics from ready-made garment factories to enrich printed works and achieve sustainable development.

Recommendations:

1- The researcher recommends directing research in the field of artistic works to draw inspiration from nature and benefit from its diverse approaches to enrich the artistic field.

2- The study recommends paying attention to studying the forms of nature in terms of their internal and external form, and research and analysis to identify what their multiple elements contain and the possibility of their artistic application in the field of various plastic arts to achieve sustainability.

3- The researcher recommends the necessity of emphasizing the strengthening of the relationship between nature and art, which is done through studying it, revealing its aesthetics, and investing in it in the artistic field in general and the field of artistic works and the field of textile printing in particular.

4- Encouraging small projects, such as exploiting leftover fabrics, to reduce unemployment and achieve sustainable development.

5- Increase research on leftover fabrics, while clarifying their three dimensions, which are reducing unemployment, optimal exploitation of leftover fabrics, and rationalizing consumption.

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