



Employing the Morphology of Plant Decoration Using Nature Simulation in the Kingdom of Saudi Arabia as a Source for Producing Printed Pendants Using Printing Techniques

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Abstract:

The morphology of plant decoration is considered one of the applied sciences that specializes in studying the external and internal shape of plants and their distinctive form with the aim of achieving utilitarian aesthetic designs, after transforming natural plant shapes into design elements inspired by the shapes of external and internal plants using different printing techniques appropriate for each design. The morphology of plant decoration is linked to a number of Sciences, such as botany, ecology, and environmental design, are integrated design fields that draw inspiration from the environment and preserve its resources. The research is based on three basic approaches. The first approach is to study the concept of plant morphology, the second entry is to create contemporary designs of plant forms in the Kingdom of Saudi Arabia, and the third entry is concerned with creating printing plates executed using printing techniques derived from the different plastic values of the plants of the Kingdom of Saudi Arabia by linking them to the table. On heritage. Through these entries, the concept of plant morphology was clarified, the types of plants in the Kingdom of Saudi Arabia were identified, and an analytical study of the shapes of these plants and their importance in the field of art in general and the field of printing in particular. Accordingly, we have made several designs suitable for use in printing pendants, inspired by the morphology of plant decoration in the Kingdom of Saudi Arabia, but they were processed using printing techniques appropriate for each printing design to enrich contemporary printing artistic works.

One of the most important results we reached. Adapting the various plastic possibilities of the morphology of plant decoration in the Kingdom of Saudi Arabia and employing them in innovative plastic formulations that combine simplicity and modernity, whether in terms of the prepared design or methods of performance, and then using them in printing pendants. The research is also based on the experimental descriptive approach through the personal experience of the research.

key Words :

Employment - morphology - plant decoration - nature simulation - Kingdom of Saudi Arabia - Production of printed pendants - With printing techniques.

Received: 12 May 2024 **Revised:** 6 June 2024 **Accepted:** 22 June 2024

The Introduction :

Nature is considered the primary source of inspiration for the artist, and the undisputed touchstone for inspiration and scientific and artistic deduction. Nature is full of different elements that are subject to specific regulations and laws in their development.)1(The artist no longer dealt with the visual manifestations of the elements of nature, but rather extended his insight beyond that and began to deal with the structures of shapes in their abstract laws, and search for dynamic laws in the internal structure

of the various elements. There is no doubt that nature needs eyes that perceive it, understand its meaning and significance, and can extract the structural foundations and laws that guarantee its continuity and development. Riad (2000 AD) says: "The starting point in artistic work is for the artist to learn how to look at the facts of nature, and reveal its secrets. He connects its parts and then analyzes that view in depth to ensure the development of the artistic repertoire stored by the human mind, so that it comes back to produce it again in the form of plastic art" (17). The artist records his feelings inspired by his environment, and the artist's work is to recrystallize the form in nature from his point of view in a way that achieves the rules of composition and the aesthetics of the overall form of the artistic work. The feeling of enjoyment in viewing that work is due to aesthetic perception as a result of the sensations and feelings that the work aroused in the soul of the recipient, each according to his aesthetic experience. Picasso says: (in Al-Basiouni, 1986 AD): "Man cannot work against nature, for it is stronger than the strongest man, and It really benefits us to be in agreement with it and we may allow ourselves some freedom, but this is only a matter of differentiation" (4).

Moore (1966 AD) emphasizes the importance of nature in the artist's creativity, saying: "I was able to discover the principles of form and rhythm from studying things in nature such as pebbles, rocks, bones, and trees. The artist can expand the effects of his experience with form by studying those innumerable groups of entities and rhythms that... Nature always abounds with it" (51, p. 24). Forms in nature are diverse and have many elements and shapes, and their diversity is increased by the different textures of their surfaces, which are the result of the internal organizations and structural compositions of the elements. It is noted that the Kingdom of Saudi Arabia has a diverse vegetation cover, This is because it grows in different environments.)2(The geographical area of the Kingdom varies significantly from one region to another, and its surface and climate also differ, which has led to the existence of many different natural plant environments. He noticed the extent of the possibility of benefiting from this natural diversity and employing some plant forms through the philosophy of plant morphology in the Kingdom of Saudi Arabia. The morphology of botanical decoration depends on inspiration from the external shape of plants. The designer reformulates the plants according to his vision, and then introduces what is new in design and technology. The morphology of botanical decoration aims to produce utilitarian works of art such as environmental paintings using printing techniques on cloth. We notice the patterns presented by the arts of ancient civilization. Expressionism emphasizes the benefit of plant structure forms up to our current era, in which many artistic trends have emerged, calling for a return to the environment and its preservation in both the design form as well as the implementation methods followed. In application of this, the research presents decorative, typographical and other integrated applications for plant architecture designs, especially those inspired by the environment in the Kingdom of Saudi Arabia in a contemporary manner. With identification of the applied implementation methods, as well as a special analytical study of the plant structure presented in the research in terms of form and method of implementation. Morphology of plant decoration is one of the applied sciences that specializes in studying the external shape of plants and their distinctive form and taking advantage of the plant structure in Saudi Arabia with the aim of presenting designs and works of contemporary art that are aesthetic and utilitarian. Morphology of plant decoration is linked to many other human and applied sciences such as botany, ecology, and environmental design.)3(It is also a link of communication. Between plant ecology and ornamentation in terms of form The design, method and materials of implementation of the printed plate. The role of the designer in drawing inspiration from nature becomes clear through transforming and reformulating plant shapes and classifications into design elements inspired by the surrounding environment, which is the shape of plants. Inspiration is carried out in several types, including what depends on the shape of the plant and its external parts only, as well as the structure of the cells. Or take inspiration from the dynamics of plants during growth .

Types of inspiration include:

1- Formal inspiration: This is done by drawing inspiration from the aesthetic appearance of plants or part of the plant, and the aesthetic, structural and color values it contains, then completing the rest of the design elements.

2- Kinetic inspiration: resulting from inspiration from the shape of the movement of twisting, as in grapes, or opening and closing, as in sunflowers, or branching, which is characterized by the presence of a central point from which it branches, as in tree branches.

3- Symbolic inspiration: Its symbolic purpose is either to suggest the shape of the plant without directly representing it, or the shape of the plant represents spiritual symbols linked to religious beliefs and rituals.

Inspiration goes through several stages, starting with the visual perception of the aesthetic values of the plant and its selection, followed by studying the form with its elements and design systems such as diversity, balance, and symmetry... as well as the linear rhythms as in the leaves of the plant, then transforming the natural form into an element. Repeatable decorative design, which serves as the basis for producing the design by using design methods, including repetition, symmetry, and circumvention, in addition to the designer's experience and expressive ability. This is followed by the implementation of the work. Artistic and choosing the appropriate technique, therefore, the morphology of plant decoration is linked to many sciences concerned with studying the environment and its various phenomena, including "ecology", which has a direct impact on the product within an ecological system.)⁴

Research Problem:

The research problem is determined in

How can the morphology of plant decoration be employed using nature simulation in the Kingdom of Saudi Arabia as a source for producing printed pendants using printing techniques?

Research Hypotheses:

1- The artistic vision of plant morphology in the Kingdom of Saudi Arabia and its analysis in terms of general shape, color and surface texture brings new artistic solutions in the field of arts in general and the field of printing in particular.

2- The research assumes that using the aesthetics of Saudi plant shapes and their fluidity in contemporary designs enriches the printing presses with printing techniques.

Research Objectives:

1- Identifying the different types of plants found in nature in the Kingdom of Saudi Arabia

2- Learn about the philosophy of plant morphology and how to benefit from it in producing contemporary print works of art.

Research Significance:

1- Emphasizing the importance of nature in the Kingdom of Saudi Arabia as a source for enriching contemporary printing works.

2- Research into the different plastic values of plant morphology using nature simulation in the Kingdom of Saudi Arabia is an entry point to enriching contemporary innovative formations of printing artwork.

Research Delimitations

Spatial Delimitations: This research was carried out in the Kingdom of Saudi Arabia.

Objective Delimitations: - Studying the morphology of plants in Saudi Arabia through the external and internal shape of plants and stems and using them to create designs suitable for printed works using printing techniques.

- Innovative designs inspired by plant morphology in the Kingdom of Saudi Arabia, mimicking nature.

Research Methodology:

The research follows the descriptive and analytical approach: this is represented by the analytical study of selected samples of the terrestrial and aquatic plants of the Kingdom of Saudi Arabia.

Experimental (applied technical) approach: It includes:

- 1- The various forms of plant morphology in nature in the Kingdom of Saudi Arabia are studied.
- 2- Conduct various experiments on fabric materials using different printing techniques (direct drawing - thermal paper printing - digital printing - stencil printing).
- 3- Implementing artistic paintings using various printing methods, drawing on the philosophy of Saudi plant morphology.

Inductive approach: through previous studies and sources of information.

Research Terminology

Botanical decoration:

It is the decoration derived from decoration, which is the art of decorating things with engraving, embroidery, drawing, etc. It is decorations derived from different plant leaves and plant flowers that are overlapping, intertwined, or symmetrical and repeated on a regular basis.

Simulating nature:

Al-Basyouni (1986 AD) defines nature as a general term as “everything that God has created, including humans, animals, birds, insects, fish, reptiles, and inanimate objects, and all that surrounds them of phenomena and attributes that influence them and are affected by them. Nature is an expansive entity that is difficult to encapsulate” (4, p. 45). The researcher included a specific part in the forms of plants (desert and leafy) to extract the plastic values of plants through the concept of plant morphology and to benefit from it in implementing artistic printing designs.

Printed pendants:

They are plastic works that can be hung or installed on walls for the purpose of beautification. The morphology of plant decoration has helped artists produce many shapes of pendants inspired by the shapes of plants and which achieve formal and utilitarian beauty.

Previous studies :

1-(Marwa Ezzat Muhammad, 2011 AD) A study entitled (Structural Systems for Morphogenetic Design as a Source for Teaching Decorative Designs) “This study aims to deepen the designer’s understanding of the morphogenetic system and its relationship to decorative designs. It also aims to invest the morphogenetic system in extracting structural systems as a source for decorative designs, and this study agrees “With the current research, this study focused on studying structural systems and benefiting from them to enrich decorative designs.” It differs from the current research in that the current research focused on the aesthetic values of coral reefs to enrich the printing work of art education students

2- Hussein Ali Muhammad Awad’s study (1983 AD) entitled (The geometric system of the plant element under microscopic vision as a source for enriching decorative designs)

The study aimed to identify the structural foundations of plant components through microscopic vision and to extract a group of engineering systems in the structure of some different sectors. The engineering system of plants was used through microscopic vision, through an analytical study of this system, and an investment in design through identification of the foundations. Structural components of plants, And extracting the geometric systems in it to produce decorative designs. The researcher studied the geometric system present in the structure of different parts of five plants in which there is a degree of geometric systems such as the radial, horizontal, and vertical systems. Then the researcher produced a set of artistic designs by applying three approaches to experimentation - recombination - Deletion - disintegration - addition.

3-3- Study: (Iman Muhammad Tawfiq Al-Sukkari: 1989 AD) Title of the study: (Extracting geometric shapes from nature in printed designs)

The researcher in this study was exposed to nature through her treatment of the plant element, and the aesthetic and plastic values it abounds in proportion to its biological functions. With the aim of identifying structural values and laws through the microscopic vision of plants, and benefiting from them in creating and producing printed designs.

Procedural steps for research:

Firstly :Theoretical framework : Includes

nature :

Nature is 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., as well as the foundations of design such as rhythm, diversity, balance, proportion, symmetry, regularity, and others, which are characterized by constant change. In its visible appearance, according to the changes that occur in external nature, and despite the development and systems that occur in these elements, they are governed by the eternal natural law of growth and change. All living organisms are governed by the natural law of growth and development, which makes it difficult to limit this law, and it also reflects a visible system. Integrated and systematic, the designer extracts from it what he sees fit in order to express it with his own vision and technological means in his designs inspired by nature.)5(

Man by nature tends toward order in his thinking, and this creates a kind of relief and calm in his mind. Since his early childhood, he has always sought order in the various aspects of nature, so he uses his innovative 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.)6(

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 that is characterized by awareness and understanding of nature and its design possibilities, as simulation depends on structural systems, concepts and shapes. The principles that shape nature and how to manage them and learn from them.)7(

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.

The method of imitating nature in designing printing pendants:

The artist can derive the structure of his design and define its elements when following the theory of nature erasure through the following methods:

- 1- Imitating the look of a living organism - creating the shape - the appearance of the design (appearance).
- 2- Simulating the structure of a living organism - establishing proportions - design structure (structural structure).
- 3- Simulating the texture of a living organism - creating the material - designing texture (texture).
- 4- Imitating the color of a living organism - creating color - design color - (color).

5-Simulating the living mechanism - creating the function - functional features of the design (function).

It is also possible to find various design solutions and results using one of the previous methods independently or using more than one method.

- The internal structural system of plants in nature

The harbingers of the modern Renaissance began at the beginning of the seventeenth century, and it took the seventeenth and eighteenth centuries, when academies appeared, scientific conferences were held, and some successful successes occurred that had a great impact at the beginning of the seventh century, and many facts of science were revealed. During that period, some scientists appeared to begin studying, and then some of them appeared. One or more branches of plants were studied by scientists from that period, including the German scientist Junken Jung, who is considered one of the first botanists to be interested in studying morphology. They believed that plant origins were a distinctive characteristic for dividing plants according to other characteristics, as Nebra proved, and the stem, leaves, flowers, fruits, and seeds are the parts of the plant. The complete one. The invention of the microscope had great merit for studying plant anatomy. In 1938, the capacity of the device reached one hundred angstroms, then it improved and became less than three angstroms now. Among the most famous plant anatomists are the Italian scientist Malpighi and the English scientist Grow. They discovered the stomata in the leaves and knew their benefit. It is also known that plants have different vessels, including woody vessels, milky vessels, and glandular vessels.)8(

Morphology can be divided into the following sciences

Plant morphology: This science examines the apparent shape of the plant, the arrangement of its parts, and the relationship of the plant's organs to each other.

Plant anatomy: This science studies the structure of indoor plants.

Cell science: studies the structure and division of the cell.

Plant physiology: It examines the vital activity of various plant organs, the functions of each, and the effect of environmental factors on them

Plant division science: It examines the naming of plants and their relationship to each other.

Plant ecology: It studies the relationship of plants to the environmental conditions in which they live.

Paleontology: It studies plants that were growing in different geological eras.

Plant pathology: It studies plant diseases in terms of their symptoms, causes, life cycles, and methods of combating them.

Plant genetics: It studies the various theories of inheritance of traits in plants.

Plant breeding: It studies the application of plant genetics to obtain new plant strains that have the required characteristics and genetic traits.

- Ecology and plant morphology

Concerned experts and specialists agree that environmental science currently occupies an important space between basic and applied sciences. Perhaps one of the most important things that prompted modern people to look at environmental sciences with such seriousness are the various interactions between development activities and the environment, noting that the United Nations Conference on the Human Environment in Stockholm in 1972 gave the word "environment" a broad understanding, so that it came to denote more than just natural elements. (Water, air, soil, minerals, energy sources, plants, and animals).). Rather, it is made as a stock of material and social resources available at a time and in a place to satisfy human needs and aspirations. Ecology arose as an objective need to investigate the conditions of the natural environment, or the groups of living organisms present in this environment. Ecology investigates individuals, groups, societies and ecosystems, and is therefore considered one of the important branches of biology as it investigates living organisms and their environmental habitats. Ecology is known as the

science that investigates the relationship of living factors (animals, plants, and microorganisms) with each other, and with the non-living factors surrounding them. It is concerned with studying the situation of the living organism in its location, as well as its spatial surroundings. Ecology attempts to answer some questions, including: How does nature work, and how do living organisms deal with other living things or with the environment surrounding them, whether chemical or natural. This environment is called the ecosystem, which we find consists of living and dead or inanimate components. So, ecology is the study of living organisms and their relationship with what is around them and their impact on our relationship.

Divisions of ecology

Several divisions have been developed for ecology, including:

1- Individual ecology

2- Collective ecology. This science is divided into:

-Wild ecology

- Marine ecology

There is another division, which divides the environment into:

1-Animal ecology

2- Plant ecology

This is what we will discuss, but from a morphological perspective, i.e. (plant morphology), to benefit from the study in making designs derived from the plants of the Kingdom of Saudi Arabia to produce contemporary printing pendants.

Morphology:

As we previously mentioned, it is one of the branches of biology that is concerned with and specializes in studying the structure and structural composition of living organisms, such as animals and plants, or the modification of the shapes of their organs, their arrangement, and the arrangement of tissues, and describes their variations. It is also known as the science of morphology, which investigates the shape of animals and plants and their structures, that is, a study of the structure of the living organism, its form, and its characteristics. .

Plant morphology

It is everything that pertains to the plant in terms of its external appearance, represented by its length, method of growth, reproduction, and color, and its internal and structural composition and properties of each part of the plant. The plant's body is divided into several sections: roots, stem or stem, flowers, cilia or hairs, depending on the type of plant. Each of its components also contains cells. The plant is classified into several categories according to plant taxonomy, as follows:

First: In terms of appearance:

1- Plants with roots, stems and leaves

Either (floral or non-floral), such as: fava beans

And corn, palm trees and olives

2- Plants without roots, stems, or leaves

Such as algae, which are types (brown algae

, green, red, blue, flagellar, loginous,

Cretaceous, diatoms)

Second: In terms of installation and construction

1- Vascular plants:

A- Seed

- Gymnosperms (such as pine)
- Angiosperms (flowered)
- Monocot (such as wheat and corn)
- Dicotyledons (such as beans and cotton)

B- Seedless

- Ferns (such as maidenhair)
- Horsetails

2- Non-vascular plants

A- Mosses

- Introverted sect (Kabdiyya)
- Existing sect

B- multicellular

Brown, red, green, blue algae

Classification of natural morphology:

1- External morphology: It includes the study of aspects of the external appearance, such as shape, surface structural formation, color, and pattern.

2- Internal morphology:

It includes studying the structural structures and shape of the internal parts.

Plant patterns in nature are divided into two types:

1- A pattern in the form of binary shapes:

The researcher found that two-dimensional shapes exist in nature in three basic forms. The first is single-celled microscopic organisms, such as diatoms, which are a large group of silicate algae, most of which are single.

The cell appears in various circular, square, and triangular shapes, and it is one of the most famous types of phytoplankton

In seas and oceans or plant cells under a microscope, the second image is of two-dimensional shapes. In nature, it is represented by cross-sections of plants or fruits.

Circular shape:

Circular shape: It is widely represented in single-celled diatoms, as well as microscopic sectors of plants. Through a section of a white oak tree, the circular shape can be seen with the naked eye in plants. Its fruits are spherical or cylindrical in shape, such as onions, tree trunks, and lotus roots and kiwi fruits. As in Figure No. (1,2)



Figure No. (1,2) shows plants in the shape of a circle

Triangle shape:

Triangular shape: It is not usual to see sharp triangles in nature with the naked eye. Even if it is possible with the help of an optical electron microscope, amazing triangular shapes and structures can be seen in cross-sections of plants, such as the cross-section of the stem of the Tilia plant, and sometimes in the cross-section of a three-angled stem, as in the Spiris plant. As in Figure No. (3,4).



Figure No. (3,4) shows the triangle shape in plants

Polygonal shapes:

Polygonal shape: Polygonal shapes are among the most common shapes, as we see them as a pattern that covers bodies. Plant or animal organisms as a repeating pattern, forming coherent networks we see it on the pineapple microscopically, it is found in chloroplasts on plant leaves and can be seen in a single image microscopically, as in diatoms, or with the naked eye, in a cross-section of an okra seed. As in Figure No. (5,6).



Figure No. (5,6) shows plants in polygon form

Rectangular shape:

Rectangular statue: A rectangular statue, but it can be in the form of a strip in the moss or in a picture variation in plant cells and have microscopic images. As in Figure No. (7).



Figure No. (7) shows the rectangular shape

Star shape:

Star shape: The star shape is often pentagonal or hexagonal and is found in many forms in diatoms and fruit sectors such as star fruit and the shape of seeds in a cross section in an apple and a snowflake

In its various forms, it is the most common, as snowflakes come in many shapes, but they always represent. A six-pointed star, as in Figure No. (8).



Figure No. (8) shows the star shape

2- A pattern in the form of three-dimensional shapes

Spherical shape:

Most of the shapes around us are spherical in shape and of different sizes, like some fruits fruits such as oranges, grapes, apples, watermelon, and many microscopic forms such as pollen seeds such as plant seeds and phytoplankton such as coccolithophores as in Figure No. (9,10).



Figure No. (9) (10) shows the spherical shape of the plant

Cylindrical shape:

It is one of the common shapes in nature, and we see it in the trunk of a tree, a palm tree, the stems of plants, and some vegetables and fruits that take a cylindrical shape, such as cucumbers and bananas. as in Figure No. (11,12,13).



Figure No. (11,12,13) shows the cylindrical shape

Conical shape:

We find it in many forms in nature in some types of trees, such as pine trees and their fruits, and the fruits and roots of many vegetables and fruits, such as strawberries, carrots, and radishes, and in the Christmas tree worm, as in Figure No)14,15,16).



Figure No. (14): The tap represents a conical shape

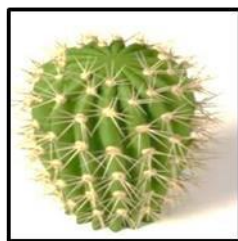


Figure No. (15): The cactus shows a cone shape



شجر الصوبر



فرولة

Figure No. (16) shows the spiral shape in plants

Spiral shape:

We find the spiral shape in the shapes of some flowers, such as sunflowers, in a spiral shape around the midpoint the distribution of the plant's leaves on its stem is often in a spiral shape, and from here it appears that the spiral shape is one of the basic shapes in nature, like the bamboo plant. As in Figure No. (17,18,19).



Figure No. (17,18,19) shows the spiral shape

Star shape:

It is one of the shapes that is clearly widespread in nature, so much so that things and beings bear their names, such as the stars of the sky, the sea star, the star cactus, the star jasmine, and the earth star herb. Many flowers contain in the heart of the flower a number of star shapes, such as a flower, and in many cases the star shape is an overlapping image, such as a sea cactus and a star herb. The ground or in a contiguous form, as in flowers. As in Figure No. (20).



Figure No. (20) shows the star shape in plants

Branched form:

It is one of the forms that are widespread around us in nature, and its most famous examples are trees, plants, and coral reefs of all kinds As in Figure No. (21).



Figure No. (21) shows the branching form in plants

Radiological form:

It is found in various plants such as the cactus form and the sunflower plant as in Figure No. (22,23,24,25).



Figures No. (22, 23, 24, 25) show the radial shape in plants

From the above, we find that plant morphology, i.e. the science of forming plants, is rich in good formations, colors, and design elements, and it is considered a very fertile ground, some of which we can study and use in the design process, and benefit from morphology through that study. We will later mention how to benefit from their formation and colors and install some of them in the design process. To create a design for printing giants and to preserve Saudi heritage.

The most famous plants in the Kingdom of Saudi Arabia:

The most famous wild plants found in Saudi Arabia:

Desert Rose :-

It is a type of flowering plant with a distinctive shape, which is native to the tropical and subtropical regions of the Kingdom of Saudi Arabia, and the rest of the Middle East and Africa. It is an evergreen shrub, reaching a height of one to three meters, and produces red and pink flowers, and is distinguished by its wide stems. It is also a slow-growing plant, growing at a rate of only 30 cm per year.

- Arabian Bonatia:

It is a perennial herb that can grow to a length of 25 to 125 cm. It also contains many flowers, the color of which is between green and yellowish green. These flowers have a strong smell. The origins of the Arabian Bonatia plant go back to the Kingdom of Saudi Arabia, Yemen, and East and North Africa. It also has great horticultural value in Saudi Arabia.

- Al-Raqrouq:

Raqruq is one of the flowers that appear in the spring. It is considered a perennial plant. It is mostly found in hard ground and also in the plains. It has small leaves with a circular shape, and its length is about forty centimeters. Its original homeland goes back to the Kingdom of Saudi Arabia, the Emirates, Oman, and Sudan. , Egypt, Iraq, and other countries.

- Al-Qalqalan:

It is a seasonal pastoral herb, and is considered one of the plants that appear mostly in the plains and fertile lands. It is one of the plants that has small white and purple flowers that appear in the spring. Qalqalan also produces small pendulous fruits, about twenty centimeters in length, and with leaves. Semi-circular.

Yolk:

It is one of the flowers that appear in the spring. It is considered one of the plants that grow in sandy soil. It tolerates drought greatly. Its length is about thirty-five centimeters, and it has branches that carry yellow flowers.

The shamrock:

It is one of the flowers that appear in the spring, and it appears mostly in the plains. It is considered one of the plants that reproduce by seeds and covers the entire ground. One of the characteristics of the clover plant is that it contains superficial roots, about fifteen centimeters long, and has leaves that resemble a semi-circle, slanted. Inward, its flowers are distinctive in yellow. They are also considered small in size and have a very distinctive scent.

Lavender:

Lavender is considered one of the plants that is widely spread and grown in most places. It is found in abundance in sandy lands and also in the plains. It also decorates the Saudi deserts with its purple flowers during the spring, in addition to its very distinctive scent. On this basis, the distinctive purple color was chosen as the color of the carpets. It is used in official occasions, and to receive presidents and state guests. There are other trees in the Kingdom, which are:

"The Jacaranda Tree"

Which originally dates back to Brazil, and is found in the city of Abha in southern Saudi Arabia. It is a tree with clusters of beautiful violet flowers. It belongs to the Benyonia family, and has leaves that are distinguished by their sharp tips.

"Peruvian Peppertree"

It is located in the city of Abha in southern Saudi Arabia. It is known that Peruvian pepper is grown for the purpose of decoration. It is also called pink pepper. It is one of the distinctive plants with perennial vegetables, as its leaves do not fall. The original homeland of these distinctive plants is the country of Peru.

"Araucaria Tree"

Araucaria trees are trees that have variegated leaves. They are known to be trees with perennial vegetation and a conical shape. They are expensive trees, and they also have many thin, pointed leaves.

"Fan Palms"

The Washingtonian palm tree is considered one of the trees most used for ornamental purposes. It is grown in southern Saudi Arabia. It is one of the distinctive palm trees that reaches a height of 20 meters. It is native to the United States of America, to the state of California and also to the state of Texas.

lemon Tree

Evergreen, native to Southeast Asia. Lemon fruits have been cultivated since ancient times. It is found in the Riyadh region on farms, and its trees are good ornamental trees, due to their aromatic scent. It can be shaped by pruning, in addition to the fruit's colors matching the colors of the bright green leaves.

Saudi Arabia often grows lemons in the same period as its citrus cultivation, that is, from February to April. The lemon tree is usually small, as the highest height it can reach is about six metres. As for the shape of the lemon fruit in Saudi Arabia, it does not differ from the natural shape of the fruit. It takes an oval shape, and is yellow and sometimes green in color

Peach-tree

It is grown in a number of regions of the Kingdom, including Al-Jawf, Asir, Mecca (Taif Governorate), Tabuk region, and Al-Bahah region. The report explained that locally produced peaches are characterized by high quality and distinctive taste, which are preferred by a wide segment of consumers. The report confirmed that there are several varieties of peaches produced in the Kingdom, the most prominent of which are Desert Gold, Tropic Snow, Tropic Beauty, and Early Grand.

Climbing, trellis, or purlin plant

A weak plant whose stems are not able to grow vertically on their own, **so** they climb in some way onto a nearby object, such as tree trunks or fences, or to rise and reach the sunlight, as in the case of climbers, or extend the stem, creeping along the ground, in the case of purlins. These plants use spiral tendrils that twist to cling to other objects.

Lavender flowers

It has a pleasant, strong scent that fills the place, especially at sunset or sunrise. The scent of lavender is often sung by poets, poets of pre-Islamic times and the Islamic era. Lavender is widespread in Saudi Arabia around Riyadh and north in Al-Saman to reach Kuwait, then northern Saudi Arabia in Rafha and in Iraq and Jordan. Lavender has not been observed in other places.

-Plant morphology and design:

It is one of the sciences emanating from the science of decorative design and has its specializations and objectives, meaning stylistic formation, and it is based on design rules and methods to produce design with correct methodological and scientific rules.

It begins with inspiration from nature, and the morphology of plant decoration specializes in researching the forms of natural plants. Therefore, it is based on the link between the morphology of decoration and plant morphology, which specializes in studying the shape of the plant and the composition of its parts, where inspiration is drawn from the morphological nature of the plant and transformed into an applied design, as ancient civilizations did. The ancient Egyptian arts used the morphology of plant decoration and presented a special style through environmental plant designs that were used to beautify temples and tombs. Plant designs also varied in Islamic arts and created securitization motifs as a unique design method in designing plant decorative elements.

The morphology of plant decoration is concerned with the design of the decorative element, then the general design using design methods, and then the implementation stages for any applied projects.

The morphology of plant decoration aims to produce contemporary applied designs and projects related to architecture and interior architecture, such as fences, architectural openings, partitions, and decorative units.

-Some forms of ancient design arts derived from different plant parts and their internal and genetic composition, such as

- Morphology of plant decoration in the architecture of ancient Egyptian art:

Behind the ancient Egyptian are applied works in which natural elements appear in various forms. They were inspired by the Egyptian natural environment, in a symbolic design style linked to the ancient Egyptian faith, reflecting the relationship of the Egyptian faith to the environment and its elements. The ancient Egyptian styles in the temples were characterized by famous Egyptian environmental plants such as papyrus plants, palm leaves, and lotus flower. The capitals of the columns were decorated in the form of belts of papyrus plants and the blooming lotus flower, in addition to a group of decorative elements from various environmental flowers, such as antimony, peony, and lily, as in Figure No. (26 - 27).

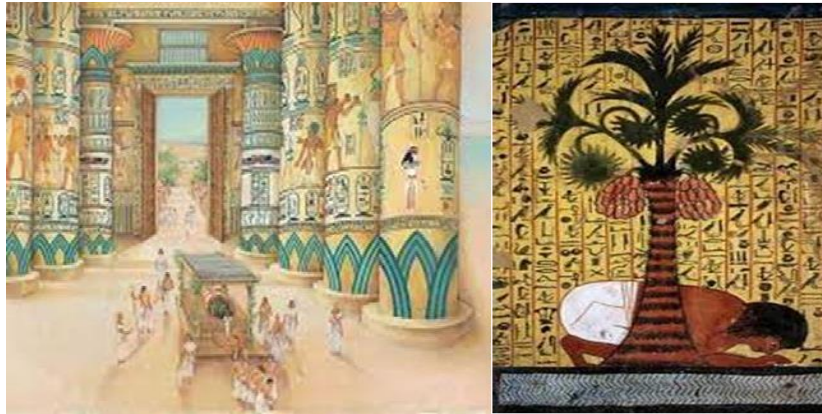


Figure No. (26,27) shows the morphology of plant decoration in ancient Egyptian architecture

- Architecture in Coptic art:

Coptic art was influenced by the elements of natural plants, and they were used as religious symbols and cosmetic decorative elements such as grapes, pomegranates, leaves and branches, olive branches, acanthus leaves, and palm tree fruits, and they were engraved on friezes and wooden and stone fillings.

-Greek art:

Greek art derived decorations from the leaves of the acanthus plant, the lotus flower, the laurel, the olive, the papyrus, the grapes, and others in its various artistic applications in the past. As in the floor of a church covered with flower-shaped mosaics in the fifth century BC. As in Figure No. (28).



Figure No. (29) shows morphology in Greek art

In Islamic art:

Islamic art was influenced by nature and its elements, such as plants. The plant decorative units formed innovative abstract formations resulting from repetition. As in the figure (30,31).



Figure No. (30,31) shows morphology in Islamic art

**- Some modern art forms derived from the external and internal parts of plants (plant morphology).
Examples:**

In modern and popular art:

At the beginning of the nineteenth century, the designer William Morris created a group of wall papers with various floral designs, as in Figure No. (32). His designs were.



Figure No. (32) shows morphology in modern and popular art

distinguished by the diversity of plant and flower elements, with the distinctive brightness of color in these works.

The shape of one of the buildings in the city of Qatar is inspired by the shape of the cactus plant, Figure No. (33).



Figure No. (33) shows a building in the city of Qatar inspired by the shape of a cactus plant

-The shape of one of the cities built in the UAE on water is inspired by the shape of the palm tree.



Figure No. (34) shows one of the cities built in the UAE on water, inspired by the shape of the palm tree

The Palm Islands are the largest artificial islands in the world. They were established in the Emirate of Dubai in the United Arab Emirates, and are located off the coast of the Arabian Gulf. They are an artificial peninsula built of sand, developed by the Nakheel Real Estate Company in the United Arab Emirates. This adds 520 km to the coastline. It is called Nakhal because it takes the shape of a palm tree topped with a crescent moon, and it consists of three islands:

- 1-Palm Jumeirah.
- 2- Palm Jebel Ali
- 3- Palm Deira

Palm Jumeirah Island is the smallest of the three palm islands. It is located in the coastal area of Jumeirah in the United Arab Emirates. It offers its visitors hotels, villas, restaurants, cafes, and wonderful beaches. On the other hand, Palm Jebel Ali Island is a medium-sized Dubai Palm, located in the coastal area of Jebel Ali in the Emirate of Dubai, and it is an entertainment island. It offers a variety of tourist attractions, including a water park, water houses, six marinas, and a marine village.

For Queen Alia International Airport in Amman, influenced by plant morphology (Acacia pollen).



Figure No. (35) shows the shape of Queen Alia International Airport in Amman (acacia pollen).

Different printing techniques used in research designs:

Direct drawing:

Direct drawing on fabric is considered one of the means that helps in obtaining beautiful and multiple results. It is possible to draw and color on many materials, and the desired design is transferred to the fabric using carbon. A color plan is made to compose the design using fabric colors or printing pastes, and after complete drying of the colors, the Iron the piece to help fix the color more on the fabric.

The art of thermal paper printing:

It is a digital printing process whose working idea is based on heating certain parts of papers, coated with a material that changes color when exposed to heat by passing it through a thermal print head to produce a printed image.

- Second: The practical framework:

This research has shown the distinct importance of using the philosophy of the concept of plant morphology in the Kingdom of Saudi Arabia, as it has remarkable components, the most important of which is geographical diversity and different environments from one region to another, which have given an abundance of plants of different shapes, composition, construction, nature, design, and colors. They are therefore rich in formal systems, expressive values, and beauty. Yes, which provided the opportunity to play And innovation through researchers' attempts to benefit from the various effects of the aesthetic formal structure of plants to produce distinct printed artistic models that enrich the field of textile printing in the Kingdom of Arabia. Saudi Arabia.

It includes (making several designs suitable for pendants printed with different printing techniques by using leaves, plant shapes, different flowers, and plant stems, using the abstraction method in some of them, and taking advantage of leaves to make contemporary designs through the concept of plant morphology.)

The first artistic work



The first printing work is carried out by printing on thermal paper and direct drawing

-Materials and tools used to carry out the work: transparent and opaque printing colors - brushes of different sizes - previously prepared thermal paper.

-Method used in the artwork: printing with thermal paper - direct drawing

-Derived from the plant: palm- Aloe vera

-Description and analysis of the artwork.

We notice in this painting the balance between elements and shapes that was achieved through repetition in some cactus shapes, a group of twisted dynamic linear relationships, and a group of plants overlapping and overlapping with each other, and through the various textures of plant shapes that express the

organizational thought of the work. In this painting, he used the shapes of plants widespread in the Kingdom of Saudi Arabia, such as cactus and palm trees, in a vertical style that suggests stability and firmness. The direct drawing method was used with printing on previously prepared thermal paper to achieve transparency in some parts of the design and coherence in the printed work. We see that the painting is given hot colors represented by yellow and red in the center of the painting, expressing strength and intensity, in addition to the cool colors represented by blue and green in some spaces distributed within the artwork, which achieved a kind of rhythm and color gradation in the plant elements, and achieved mutual relationships between the form. And the ground through the interconnection between the elements achieves a harmonious, complementary relationship.

The second artistic work



The second printing work is carried out by printing on thermal paper and direct drawing

-Materials and tools used to carry out the work: transparent and opaque printing colors - brushes of different sizes - previously prepared thermal paper.

-Method used in the artwork: printing with thermal paper - direct drawing

-The technology added to the artwork: digital printing

- Derived from the plant: Jacaranda plant

Description and analysis of the artwork

It is clear in this painting the balance between the elements and shapes derived from the shape of the jacaranda plant, expressing the flow, which was achieved through a group of curved linear relationships and through creating wide and narrow areas of plants of different textures and colors overlapping with each other and intersecting with the group of zigzag lines to highlight the overlay in the composition, expressing a plant. The jacaranda, which is found in Saudi Arabia, is found automatically through the use of colors with rhythmic contrast in terms of mauve and blue to create a color rhythm, and color, orange and white to achieve harmony in the painting, emphasizing the aesthetics of wild plants and expressing the value of unity inspired by the world of plants. The technique was used in implementing these elements. Direct drawing and printing with thermal paper.

The third artistic work



The third printing work is carried out by printing on thermal paper and direct drawing

-Materials and tools used to carry out the work: transparent and opaque printing colors - brushes of different sizes - previously prepared thermal paper.

-Method used in the artwork: printing with thermal paper - direct drawing

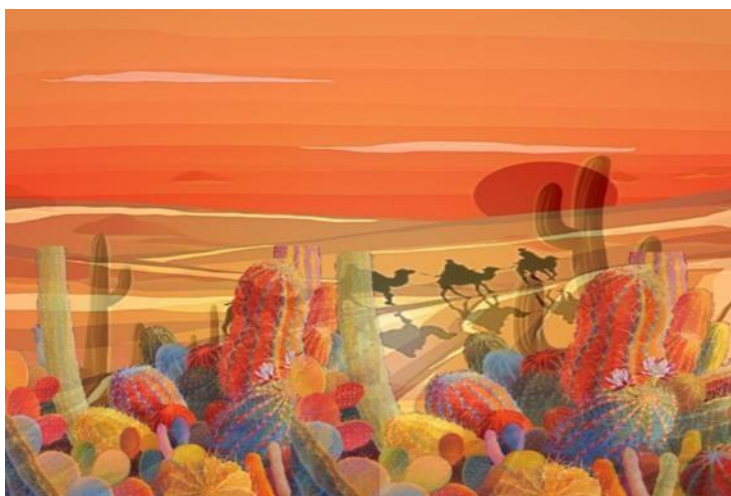
-Technology added to the artwork: digital printing

-Derived from the plant: A plant from Saudi Arabia: lemon - climber tree - lavender plant

.-Description and analysis of the artwork

In this painting, lemon plants and green leaves of different shades derived from plants in the Kingdom of Saudi Arabia were used. We notice in this painting the aesthetic effect resulting from the struggle of color spaces with various textures through the group of curved lines, leaves, and different shapes of the lemon plant. The spaces and colors express the movement and overlap of the plant, emphasizing the harmonious linear rhythms. These shapes and lines were executed by direct drawing printing and thermal paper printing technique. Where hot colors were used, represented by the shade of red, which gives the work warmth and depth, taking us to endless horizons of vision through the intertwining of lines and leaves with the plant, which achieved a kind of balance in the artistic work.

The fourth artistic work



The fourth printing work is carried out by printing on thermal paper and direct drawing

-Materials and tools used to carry out the work: transparent and opaque printing colors - brushes of different sizes - previously prepared thermal paper.

-Method used in the artwork: printing with thermal paper - direct drawing

-Technology added to the artwork: previously prepared thermal paper

-Derived from the plant: Aloe vera plant from Saudi Arabia -Jacaranda tree

-Description and analysis of the artwork:

In this painting, he used different shapes of the cactus plant, which is widespread in the Kingdom of Saudi Arabia, in a vertical style that suggests stability and reassurance.

We notice in this painting the balance between elements and shapes that was achieved through symmetrical repetition, a set of twisted dynamic linear relationships, a group of plants overlapping and overlapping with each other, and through the various touches of plant shapes that express the organizational thought of the work. The direct drawing method was used with printing on previously prepared thermal paper to achieve transparency and coherence in the printed work. We see that the painting is given hot colors represented by yellow and red in the center of the painting, expressing strength and intensity, in addition to the cool colors represented by blue and green in some spaces distributed within the artwork, which achieved a kind of rhythm and color gradation in the plant elements, and achieved mutual relationships between the form. And the ground through the interconnection between the elements achieves a harmonious, complementary relationship.

The fifth artistic work



The fifth printing work is carried out by printing on thermal paper and direct drawing

-Materials and tools used to carry out the work: transparent and opaque printing colors - brushes of different sizes - previously prepared thermal paper.

-Method used in the artwork: printing with thermal paper - direct drawing

-Technology added to the artwork: previously prepared thermal paper

-Derived from the plant: :A plant from Saudi Arabia, the lavender plant - Arabian puntia

-Description and analysis of the artwork:

The artistic painting was executed using thermal paper printing and direct drawing on the fabric, to achieve different aesthetic values by taking advantage of the movement of Saudi plant morphology. The bluish mauve color was used in the small, thin branches located on both sides of the design, representing the (lavender) plant found in the Kingdom in the form Lines next to each other, with the use of white and pink

to color plants and dark green in tree leaves, with the aim of achieving movement in the painting characterized by a distinctive color rhythm.

The sixth artistic work



The sixth printing work is carried out by printing on thermal paper and direct drawing

-Materials and tools used to carry out the work: transparent and opaque printing colors - brushes of different sizes - previously prepared thermal paper.

-Method used in the artwork: printing with thermal paper - direct drawing

-The technique added to the artwork: direct drawing

-Derived from the plant: Plant from Saudi Arabia: rose plant, palm trees, and green tree leaves

-Description and analysis of the artwork:

It is clear in this painting the balance achieved through the overlay between the plant units derived from a plant in Saudi Arabia (roses - palm trees - tree leaves) and the group of vital, twisted and vertical linear relationships overlapping with some at the top of the design that express the organizational thought of the work. We notice in the painting the blue color. In shades of green, in shades of yellow and orange at the bottom of the design, which achieved rhythm and color gradation in the elements of the painting, achieving a complementary and harmonious relationship executed using the method of direct drawing and printing with thermal paper.

The seventh artistic work:



The seventh printing work is executed by printing on thermal paper and direct drawing

-Materials and tools used to carry out the work: transparent and opaque printing colors - brushes of different sizes - previously prepared thermal paper.

-Method used in the artwork: printing with thermal paper - direct drawing

-Technology added to the artwork: previously prepared thermal paper

-Derived from the plant: A plant from Saudi Arabia, the lemon plant.

Description and analysis of the artwork:

It is clear in this painting the balance achieved through the selected textures of the lemon plant found in the Kingdom, the symmetrical and asymmetrical repetition in the design, and the group of dynamic, circular, twisted linear relationships intertwined with each other that express the organizational thought of the work. We notice in the painting the mauve color and the greenish-brown color that gives the elements The painting, which achieved color harmony in the various plant elements and created balanced relationships through the interconnection of the elements, achieving a harmonious, complementary relationship using printing by direct drawing with brushes of different sizes.

The eighth artistic work



The eighth printing work is executed by printing on thermal paper and direct drawing

-Materials and tools used to carry out the work: transparent and opaque printing colors - brushes of different sizes - previously prepared thermal paper.

-Method used in the artwork: printing with thermal paper - direct drawing

-Technology added to the artwork: A plant from Saudi Arabia, a rose plant and Saudi green foliage -

Derived from the plant: Jacaranda tree

-Description and analysis of the artwork

In this work, the shapes of green tree leaves and the shape of the Saudi rose were used in a harmonious and overlapping manner, which achieved an aesthetic effect in the painting through a group of curved and vertical lines and circles, different spaces and colors expressing the shape of the plant, emphasizing the harmonious linear rhythms, as the hot colors represented by red were used. With its shades, which give the work warmth and depth, it takes us to infinite horizons of vision through the intertwining of lines with shapes, and by using the hot colors represented by the blue color in its shades to create a color rhythm, which achieved a kind of balance in the artwork. All of this is executed in the style of printing using direct drawing and monotype.

-Analyzing and interpreting the results:

1- The artistic vision of plant shapes in the Kingdom of Saudi Arabia 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 form of plants in the Kingdom of Saudi Arabia, showed the extent to which these plants are rich in formal systems and different expressive and aesthetic values.
- 3- The analysis of the organic, geometric and spiral systems inherent in the plastic effects of desert and foliage plants and their classification yields a huge amount of complex solutions resulting from a single source.
- 4- The forms of desert and leafy plants and their richness in plastic values have given them their own distinctive nature, making it a fertile field for analytical study and creativity in the artistic field.
- 5- The analytical study of the forms of plants in nature enriches the innovative side and increases the creative abilities of the artist in drawing inspiration for plastic forms to process the print painting.
- 6- There is a close connection between science and art, and this connection becomes clear in the artist's investment in modern scientific equipment .
- 7- 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 printing.
- 8- Achieving plastic and aesthetic values for the aesthetics of plant morphology in the Kingdom of Saudi Arabia, formulated in an artistic manner that combines spontaneity and intent in the field of textile printing.

Recommendations:

- 1- The researcher recommends directing research in the field of textile printing 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 contemporary textile printing.
- 3- The researcher recommends the need to emphasize strengthening the relationship between nature and art, which is done through studying it, revealing its aesthetics, and investing in the artistic field in general and the field of textile printing in particular.

Acknowledgement:

"The authors extend their appreciation to the Deanship of Research and Graduate Studies at King Khalid University for funding this work through Large Research Project under grant number RGP2/181/45 "

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