Multicultural Education

Volume 9, Issue 3, 2023

Material Technology And Its Impact On Organizational And Plastic Relations In The Design Of Embroidered Work

Amal Owais Saber Abdelkader

Article Info

Article History

Received:
December 28, 2022

Accepted:
March 31, 2023

Keywords :
Material Technology, Plastic, Technical Capabilities, Media Of Artistic

DOI:
10.5281/zenodo.7787326

Abstract

One of the most important influences that are closely related to art in general and to the art of embroidery are those that originate from the changes that are illustrated in the permanent and continuous development of materials and their plastic and technical capabilities. Thus, the person in charge of the embroidery process, whois in pursuit of the products of these modern techniques, discovers a lot and selects he deems most appropriate to achieve his creative goals and ambitions.

The plastic art work is a chronotopic (spatio-temporal work), that is, it combines time and space. It is also a material and moral work that combines the world of matter with its various components, and the world of meaning in its various emotional forms. Therefore, artists always seek to achieve their creativity through a set of media.

These media are called media of artistic expression and consist of raw materials, where the raw material is the main source of expression, as its importance and significance are demonstrated in the fact that the different artistic fields are usually termed after the type of material that dominates the work itself.

In this respect, inthe field of art crafts, which is wide and deals with many materials, whether they are in separate or in an aggregate state, and whether these raw materials are of natural or industrial origin, or are the remains of raw materials and consumables, and other different art crafts. Such art products are labelled according to the material used and the techniqueapplied. Such are the techniques in the field of hand embroidery that its practitioner must possess tobe capable of artistic expression.

The expressivecapability in arts is dependent, determinedand directly related to the practitioner's awareness of both his potentialities and his skills in processing all the media he deals with. Thus, according to Maholi Nagy, one of the founders of the Bauhaus School, which sought within its framework of objectives to enforce the influential role oftechnology and skill in the structuring of art. It is worthy of noting that both techniqueacquisition and skill acquirement increase the expressive ability of the individual.In fact, the accumulation of such artistic experienceshelps in refining both his mental and intellectual state which in turn affects his existence.

This is to affirm that skill is not the final goal. Therefore, it does not have a fixed pattern when it is practiced in the fields of art, but it has a diversity of multiple forms,and the art-practitioner makes the best of it according to his expressive objectives. In this sense, the form in which it is presented does not construe to it distinctively, but it is a means to achieving the purpose subscribed to the value of the executed work. This is because the artistic patternis one of the factors through which the performanceis achieved, and the output of the work of art is implemented. Nevertheless, it is neither a unilateral nor a sub-work, but it is a distinct qualitative factor within the framework of the structure of the artwork.

Likewise, Judy emphasizes that learning a skill is not an end, but rather a means to achieve the goal of artisticeducation. It isan introduction to the production of artistic work, whatever its field. Judy adds, further, that acquiring the skill is not a mechanical process free from mental perception and innovation. On the contrary, it is ratherregardedas a diversifiedprocess whose characteristics meet with the diversity of raw materials, and the artistic fields, thus, adapted to the nature of the artwork itself. From a narrow point of view embroidery is definedas a technique through which a

decorative pattern is achieved. However, and from a broader perspective it is, rather, a means of artistic expression represented in the artistic work. Such embroidery is created by using and employingthe embroidery skills and techniques according to the constructivism of the design in such a way that achieves the plastic values of the embroidered artwork.

Therein, for every artist the question raised is: Is it suitable for any design to be executed with the same embroidery methods and the same materials without any modification to suit that material? In order to answer this question, it must be realized that the importance of the material lies in its plastic capabilities and the techniques offered by those capabilities and their compatibility with each other. That is, it depends on the artist himself and how he adapts the material with the different technical methods of embroidery, in order to invent new ideas according to his own feeling and method.

The design of the embroidered artifact contains many structural and organizational plastic relations that the different techniques of the materials can contribute to, thus, confirming and highlighting them while achieving the plastic values that contribute to the aesthetic perception of the workpiece or vice versa.

In this sense, hand embroidery is a distinct field of fine art which seeks to benefit from various techniques by integrating the different embroidery techniques with the plastic capabilities of other materials to enrich the embroidered artwork.

Introduction

The multiplicity of materials and their data, whether natural or manufactured, have multiple plastic capabilities that allow the diversity of the techniques used, as well as their different color effects that contribute to the development of the plastic skills of the embroiderer. It is also possible to achieve many fine values, color relations, and new innovative premises for embroidery products, by bringing about a process of merging the techniques offered by the plastic capabilities of different materials with the methods of embroidery, in order to reach plastic visions characterized by an aesthetic nature. Such is the outcomeof the raw technology contribution to achieving plastic and organizational relationships for the design of the work of art as well as the plastic values.

The research problem is summarized in the following two questions:

To what extent does raw technology contribute to achieving the structural and organizational plastic relations of the embroidered artifact?

To what extent can raw material technology and embroidery techniques achieve plastic values in embroidered artwork?

Research objective:

Achieving plastic and organizational relationships through different techniques of material and embroidery methods.

Achieving the plastic values of the embroidered artwork, depending on the diverse and technical methods of embroidery, as well as the different data of raw materials.

Research Assumption:

There is an artistic role for the different techniques and methods of embroidery in achieving organizational and plastic relations in the design of embroidered work.

There is a creative role for raw technology in achieving fine values in the embroidered artwork.

Research Importance:

1- Shedding light on the importance of material technology in enriching the fine construction and organizational relations for the design of the embroidered artwork, as well as in enriching its aesthetic aspect through achieving fine values.

2- Finding multiple experimental approaches through the plastic relations between the embroidery methods and the different techniques of raw materials, which contributes to enriching the structural systems and aesthetic values of the executed art crafts.

3- Developing the fine technical capabilities of the artist involved in the embroidery process, as it contributes to raising the fine aspect. This owes to the fact thatthe materials and embroidery methods contain multiple plastic capabilities that lead to the enrichment of embroidered products based on the integration of embroidery methods and techniques of those materials.

Research terms:

Material technology:

It is the way by which the artist deals with the raw material and adapt it to implement works of art bearingexpressive contents and artistic values that make us get the impression upon seeing them that they have acquired softnessandpliability as well as an aesthetic value by virtue of the artist's skill and plastic experience.

Structural systems:

Iyad Hussein Abdullah defines it as "those relationships emerging between structural elements and units that the artist seeks to inflictupon his artwork in order to determine the method of its construction according to a set of sub-relationships.

Fine values:

Those are the values that are achieved through the organizational structural processes of the elements and plastic items, which are called in many references "the foundations of designing", and "are considered the criteria for achieving any aesthetic value and determining any artistic creativity".Such fine values are "clearly revealed to us when we perceive those foundations within the framework of the total value, which leads us to conceptualize them as the aesthetic bases and conditions or criteria for our aesthetic judgments".

Review of Literature:

Among the related studies to this research work are:

1 –A study by Ahmed Hassan Ahmed "93" entitled "Designing decorative panels based on the structural foundations of the buttoned castanets in Islamic art."

It aims at studying the foundations of the construction of the Islamic buttoned cymbals and their recurrent patterns as an introduction to teaching the shape, thebackground, the methods of repetition, replication, diversity, equilibrium and the ratio through which the link, unity, congruence and harmony in the construction of the decorative painting are achieved.

The current research benefited from this study in dealing with structural relations and achieving the plastic foundations.

2-A study by Osama Qaoud "2006" entitled "The Interrelationships between Postmodern Trends and Digital Design"

The study aims to draw out aesthetic and structural values in artworks with digital technical design solutions, in addition to finding inputs that enrich the structural aspects.

This study agreeswith the current research on how to figure out the structural foundations in the various arts, as it enabled the researcher to determine the structural foundations for constructing artifacts based on those buildings.

3-A study by Hussein Hajjaj "2006" entitled "Decorative Ethnography between Idea and Design Building in the Works of the Egyptian Pioneer Generation"

This research analyzes a selection of artworks with artistic design solutions based on the idea and design construction in the works of the Egyptian pioneer generation, toobserve and determine the aesthetic and structural values in these artworks.

This study agrees with the current research, as the researcher had benefited from its treatment of the structural structure of design and how to adapt it to produce innovative works of art.

4- A study by Maha Ahmed Abdel Aziz "1997" entitled "A comparative study of some methods of manual and automatic embroidery on modern textile fabrics and benefiting from them in the field of small projects."

The main objective of this study is to set codified standards when choosing the optimal method for embroidery on modern textile fabrics, in addition to benefiting from the capabilities of machine embroidery and inventing new designs on contemporary design foundations.

This study has been of great advantage to the current research, particularly with respect to the identification ofthe different embroidery patterns and the selection of the most matching set with the raw material used.

5- A study by Nafeesa Abdel Rahman "1997" entitled "The Effect of Embroidery Methods on Plain, Satin, and Wool Weaving: A Comparative Study"

This study aims to determine the optimal method for matching the type of fabric with the embroidery method.

It agrees with the current research in that it presents the different embroidery methods that suit the type of fabric, as there are stitches that suit some materials and other stitches that do not match the same materials.

**** General comment on related studies:**

Throughout the above review of studies related to the topic of the current research, we can conclude that those studies were of great benefit to the researcher in identifying the structural systems and the plastic foundations of design, as well as the different embroidery methods that are compatible and commensurate with the different materials. This is in addition to choosing the optimal method appropriate to the nature and type of the material used, as well as experimenting with non-traditional materials to move from the traditional style to modernity in the art of embroidery

Theoretical framework:

First: Fine relations in the artistic work:

There are many plastic relationships that arise between the components of the artwork in general and the artwork in particular, which could be divided into:

1- Constructive relationships:

Eyad Hussein Abdullah defines it as “those emerging relationships between structural elements and units that the artist seeks to impose on his artwork in order to determine the method of its construction according to a set of sub-relationships.”

These relationships relate to the formal features of the elements and units used in the construction of the work, which are the relationships of congruence, similarity and difference.

A- Identical congruence:

It is the concurrent state of aplastic form characteristics, or as an element coincides with another. Thus, and Nathan Noubler states that “despite the monotony occasionally provoked by the correspondence relationship, it clearly confirms the strength of the element in its construction, permanence and unity, and it is the best way to design a coherent form that overcomes unity, and balance unless the repetition properties are not taken advantage of, then it becomes a burden on the artistic work.”

b- Similarity:

It is the relationship in which the properties are most analogous between shapes or bodies and differ in some properties such as the similarity of the oval shape with the circle and the ball or cone with the cylinder or the prism with the pyramid shape. This partial difference adds diversity to the relationship of these pairs of elements and enriches harmony and symmetry, because the similarity relationship is closer to moderation in all technical elements.

Similarity also includes gradations of colors or shapes that have similar values and lines that have common characteristics, such as a group of curved or straight lines, surfaces or areas of close texture, or elements of common direction. In this respect, Wucius Wong states that "the nature of the similar relationship between the elements requires knowledge and awareness in order to reach a symmetrical state between the forms that are harmonious with the work of art itself and its presentation that the similarity reflects. Wong adds further that such statemediates congruence and difference to conform to the state of moderation."

C –Difference or Variance

It is the relationship of variance, that ispresent and clear between the parts of the embroidery. It is worthy of notingthat taking advantage of this contradictory relationship is required by certain topics that aim to provoke the difference among the idea and its parts in a strong form in the plastic construction, such as the difference between the cube and the ball, the dissimilarity between the hierarchical shape and the square on one side and the circle and triangle on the other side, and the difference of the organic form from the geometric or the color contrast . Such contradiction could be divided into two issues:

The first involves what is disturbed by the relationship of contradiction and difference as a result of sudden visual transitions between adjacent elements and levels in the work of art, for which the eye may not be prepared.

The second refers tothe requirements ofthis relationship and involves the artist’s skill in combining contradictions in one place in the work to achieve the idea or subject that the artist wishes to express.

2-Organizational Structural Relationships:

The structural relationships of the elements and parts of the form are regulated by other relationships within the form as a whole, which are the structural organizational relationships “to reach a clear meaning and significance for the stereoscopic work as a whole, which means that the structural organizational relationships play an important role in arranging and sequencing the elements within the occupied structure in a way that helps in conception and perception.”

These organizations are also related to the nature of the material used in its construction and the plastic techniques and treatments of it. These structural relationships between the parts of the artistic production can be identified in the following relationships (adjacency, overlapping, seam, intersection, overlapping and interlacing)

Second: Technical methods of embroidery:

Ideas appear to the embroiderer from mental stimuli or experiences. These ideas are translated into works of art using different techniques of embroidery, and to the extent that the embroiderer succeeds in choosing the embroidery method as it matches the material used to achieve artistic values. The embroiderer may change his idea and technical methods according to the material, its properties, and experimental practices to create a distinct aesthetic product.

Hereinan important question is raised: Are all the well acknowledged embroidery methods compatible with the decoration of all materials?

To answer that question, we must bear in mind some concepts becausethe methods of embroidery or the embroidery in general have been associated with textiles throughout the ages. In fact, whenever embroideryis mentioned, what comesdirectly to our mind is the decoration of textiles with that distinctive art. Nevertheless, there are other materials such as leather with its characteristic physical and chemical properties, which differ in

its composition and appearance from the woven one. However, there is no doubt that there are some embroidery methods that depend mainly on the textile composition in their execution.
Thus, not all embroidery methods are suitable for application on all materials, but it is also dependent on two factors, namely, the nature of the material on which the embroidery is applied and its plastic capabilities.

The following is a presentation of some technical methods of embroidery:

1) Addition method:

The addition method is considered one of the most important methods used in decorating and beautifying materials, as itis compatible with the capabilities of many plastic materials, either by embroidery or by using different pieces and installing them on the background of the implemented work of art, which is called the "Applique" method. This method is considered one of the most important and best methods by which the surfaces of raw materials are decorated because of its distinctive characteristics that distinguish it from other methods of decoration, as it is easy to be implemented and produces attractive and wonderful results.
The decoration in the style of addition is an art of eastern origin and an Islamic character that instigated in Egypt, Iran, India, and Pakistan, then moved to Europe through the Crusaders and then it was developed in many other different ways.

Among the methods of addition that were used in the research:

The appliqué method: It depends on the diversity in the use of materials within one piece, whether the added material is different from the material of the background, or the added pieces differ between each other in terms of material, shape or color.
The appliqué is defined as adding small pieces of material intended for execution to a large area different from it in color and often in material, by stitching them with a sewing needle and with different stitches. This addition creates a beautiful form or decorative element.
It is also known asthe placement or addition of a form of woven or non-woven materials on the surface of the background and then fixing by machine or with a visible or invisible hand stitch. The added material is usually different from the background material in color, texture and type to give the aesthetic design.

Some Embroidery Stitches:

1) Blanket:

It is one of the simple decorative stitches in which the edges of the work are embroidered as a whole, and sometimes it is embroidered from the inside. It is a well-known finishing stitch for the edges and the corners. This stitch starts from left to right.This stitch is uneven and can vary in size according to the design.

2) Branch Stitch:

It is a stitch used to define the lines andweave the veins of flowers and leaves. It is a simple stitch that could be embroidered by hand and is easy to implement on multiple materials due to its ease of application.

3)The Crow's Leg stitch:

It is called the Russian stitch, and it is known in Egyptian embroidery as the crow's leg stitch, and it is created by two arms crossed from threads.
It was widely used in oriental embroidery for several purposes, as well as in western embroidery during the fourteenth century in Italy.
There must be two stitches, the distance between them may be regular or irregular.
The crow's leg stitch is used in embroidering stems, roses, or parallel lines, as well as embroidering the edges, whether fabric or leather. It is also used to install pieces of materials on others.
Cotton, silk, or woolen threads are used in executing the stitch. As for the leather material, it is preferable to use cotton threads, where the material is compatible in terms of durability and endurance.

4) Padding stitch:

If it is weaved on the surface directly, it is called Satin Stitch and is used to fill areas on the surface of the workpiece, as it gives a kind of prominence, which contributes to making the units through which it is formed more recognizable.

5) Chain Stitch:

High stitch, as it is considered one of the oldest stitches and gives the effect of being a group of loops. It looks like a single crochet stitch and is easy to sew on any design. It is believed that the Chinese were the first to use this stitch, but the ancient Egyptians also used it in exquisite forms. This stitch was applied on raw materials versatile to suggest a braided look that gives a smooth feeling on the surface resulting in flexibility in the work ofart.
There are many stitches such as (filter stitch - wages - saddlebags) and other stitches that most often need a textured fabric to be applied.

Decoration with Sequins and Beads:

Beads are tiny objects formed from any material with a hole or holes through which it can be fixed.
The first basis in the raw material of beads is glass. It is placed in ovens with other materials, and the degree of glossiness of the beads varies according to the temperature of the oven. The beads are colored either by placing

colors with the raw material of the beads, and this is known as the dye in the dough, or coloring it in a later stage, which is known as the crust. It has many shapes such as circular, square, cube, rectangle and other shapes.
The raw materials from which the beads are made vary, as each material has its own characteristics in terms of shape, color, texture and durability. This difference in each material makes the beads a material with various specifications that can be adapted to several other raw materials. The adaptability of beads is due to their durability which in turn is due to the material from which it is made. it is possible to obtain works of art characterized by innovative and functional aspects at the same time.

Sequins and lobe shapes:

Sequins are small gold, silver, brightly colored, or matte circles that are held or fixed through a hole at the center with or without a sequin-colored bead.
As for the lobes, their shapes, sizes and colors vary, including circular, oval, rectangle, square and other shapes, comprising small, medium and large in multiple colors. The lobes are fixed through two holes on the tip of the lobe.

Third: Fine values:

They are those values that are achieved through the organizational structural processes of the elements and plastic elements, and they are called in many references "the foundations of design". The foundations of design are considered as criteria for achieving the aesthetic value of things and determining its artistic creativity, which is clearly revealed to us when we view them within the framework of the total value, which leads us to consider them as the aesthetic bases and conditions or criteria for our aesthetic judgments.
Among the most important of these values (unity - balance - proportionality and rhythm)

A - Unity:

It is the first basis of design. Unity does not mean the similarity between all parts of the design. On the contrary, there could be many differences among them, but these parts gather and become a coherent whole in any artistic work. This is achieved through the designer's success in finding a relationship between each of the constituent parts of the design, and the interdependence between the elements and the availability of the relationship between each part of the final whole, and integration arises.

b - Equilibrium:

It is the artistic composition that is produced in the proper distribution of units and colors and the consistency of their relationship to each other and the surrounding space, as it ensures that there is balance in any artwork. Achieving proportionality depends on the artist's sensibility and the way of distributing the elements of the artwork through symmetry or diversity in shape, size, color and line, all of which are formulated in a way that gives a sense of balance. The artist should convey to the viewer a sense of stability and balance in his artwork, as the viewer is always looking for a balanced relationship that gives him the aesthetic unity of things.
Balance is one of the most important rules of decoration, as it expresses the integrated design by distributing the elements within the units, organizing their relationships with each other. Symmetry is one of the simplest types of equilibrium, which is composed of threedistinct types, namely, axial - radial - imaginary.

C - proportionality:

It means the relationship between the dimensions of a specific part of the artwork and the rest of the parts. The ratio is one of the most important characteristics of natural formations and it apparently observed in many objects.Since ancient times,man has been able to identify proportionalityand mathematical measures in nature in all the elements and creatures of the universe and even in cells and particles of matter.
Proportion is the result of a comparison and relationship between distances, volumes, capacities, degrees, and parts that can be applied to two-way lines and three-dimensional volumes. Proportionality is one of the rules based on sense, and it stimulates the discovery of the distinct parts and complete spaces and how they work and integrate proportionally.

D -Harmony:

In essence, the concept of harmony is closely related to the meaning of movement, as it indicates a state of change. The existence of change and movement means perceivable events and actions, and necessarily means the presence of the active forces that cause movement, change or action.

Man has sensed harmony in himself, and through his awareness of his way of life. However, his awareness of harmony varies according to the different aspects that he experiences in the natural environment.

Fourth: Material technology and its impact on organizational and plastic relations in the design of embroidered workpieces:

From the previous presentation, it can be concluded that the role of technology in achieving both the structural systems and the plastic values of the embroidered artwork is summed up as follows:

1- The role of material technology in achieving structural systems with embroidered artwork:

The techniques used in the implementation emphasize the relationships of congruence, similarity and difference between the elements and the plastic elements used through the properties of the raw materials used in terms of surface appearance, color, and the way they are plastically processed. Through these variables, they ensure the following:

-Identical, similar, or different elements in terms of characteristics.
-The congruence, similarity, or difference of elements in terms of spatial location.
- Identical, similar, or different elementsin terms of contextual situations.
- Identical, similar, or different elementsin terms of amplitude or size.

2-The role of raw technology and embroidery techniques in achieving fine values with embroidered artwork:

Technology contributes to achieving unity by emphasizing the relationship of parts to each other, the relationship of the part to the whole, which leads to coherence and integration between the applied units and elements.
- Technology contributes to achieving harmony in its various types through the processes of diversity, repetition and reiteration of plastic processors and plastic methods, as well as sub-systems in the work, whether the chromatic, linear, or tactile system or the vertical, horizontal, and inclined axes of work.
- Technology contributes to achieving proportionality in the embroidery through the mathematical ratios of the distributedelementsand their plastic treatments as well.
-Technology contributes to achieving balance in the embroideryas it emphasizes the centrality of the work and its axes and the balance of the emerging forces through organization and technical treatments of its elements.

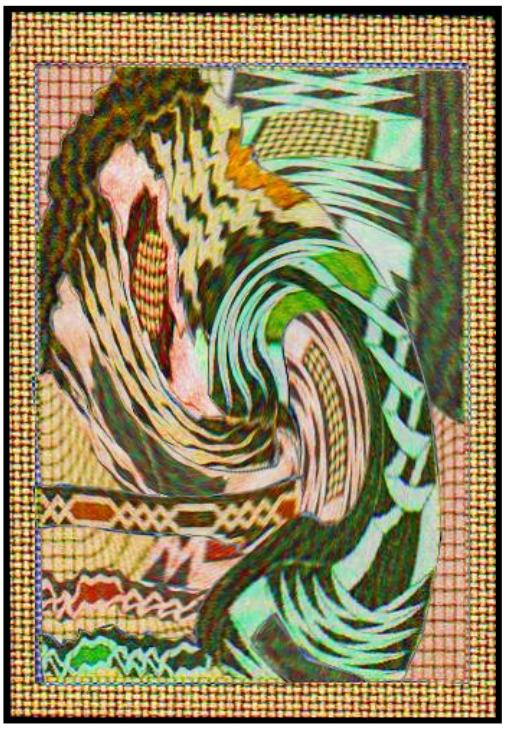
Research procedures

1- Determining the technical tools and materials that will be used, as follows:
The application was carried out on a variety of materialsinvolving fabrics of different colors and surface appearance - natural leather - artificial leather - metal wires - coloring pigments - beads - embroidery threads of different color, type and number (the materials vary according to the nature of the design and work, and the materials of each embroidery were mentioned in the work of art analysis)
As for the tools, they varied according to the nature of the materials, including:
Punch - embroidery needles - scissors - cutter - iron ruler - coloring brushes - ink pens - stapler pistol
2- Designing an arbitration form for the executed artworks to show the extent of the contribution of the technical methods used in achieving structural systems and plastic values.
3- Presenting the arbitration form to professional specialists to indicate its suitability for the purpose for which it was prepared.
4- Judging the arbitration by some specialists in the field.
5- Treat the results statistically.
6- Extracting and interpreting the results.

Analyze the works carried out

The executed works are analyzed according to the following points:
- The decorative units used.
- The materials used.
- Technologies applied.
- Work of art description.
- (10) works have been carried out, including 2 based on fabric material - 2 based on natural leather - 6 based on artificial leather material

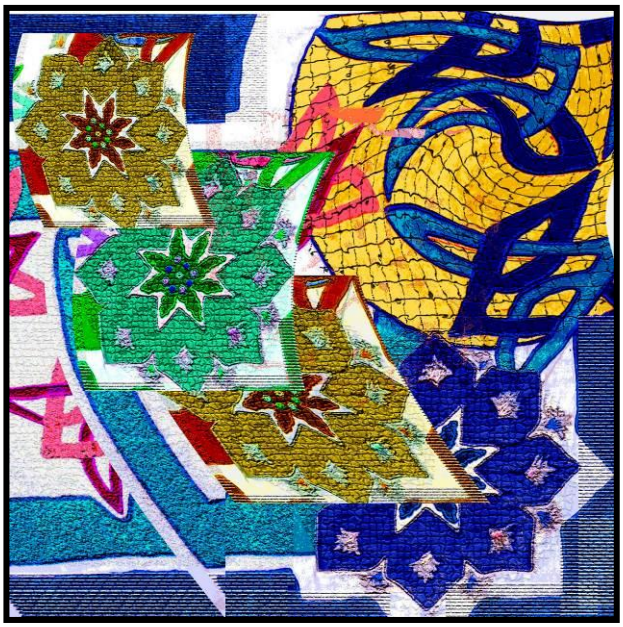
Below is an analysis of some of the executed works:



Decorative units used: Islamic geometric units.
Materials used: rug fabric - organza fabric - terry cloth - genuine leather - satin ribbons - cotton threads.
Techniques used: addition - fabrication - basting.
Job description:
The work is in a rectangular geometric shape. The background of the work is made of a “mesh texture” rug fabric, which is similar to the etamine cloth. Inside the artwork, there is a ribbon containing geometric Islamic motifs that have been altered and stripped of their lines. Curved lines are predominant in the work, and thegeometrical canary present in the middle of the artwork takes the shape of the focus is "the swirl", which gives an illusion of depth, and is made up of satin ribbons with a "silky feel". In the upper part of the artwork on both sides, a textured fabric has been added and it is seen with gradient color effects that are dominated by dark colors, as well as the part at

the bottom of the artwork. It has a fabric that looks like a gradient terry cloth, but it is made of organza with a "transparent thin texture".As for the middle of the work, it is dominated by light colors that are interspersed with few dark colors represented by the “pile texture” cloth. The natural leather material was used in one of the corners of the artwork “soft texture” and this material was echoed in one of the corners of the work from the top and executed in the manner of superimposed strips on top of each other, which gave the impression of unity in the artwork.

The use of different materials in the textile composition represented by the mesh texture - the silk texture - the soft texture - the thin transparent texture ensured the tactile values in the embroidered artwork, in addition to the different color effects between dark and light, and the plastic treatments used for the fabric used, satin ribbons and ties between the prominent and the recessed, shown by the color differences used, all of which have contributed to foregrounding the structural system and the plastic values of the work.



The decorative units used: - Islamic geometric decorative units.

The materials used: Rayon fabric - bathrobe cloth - cotton threads - linen fabric - cordon.

Techniques used: Addition - Unloading - Flap Stitch - Crochet Chain Stitch - Saddle.

Work description:

It is a square geometric shape that contains Islamic geometric units from the bottom of the work to the top by zooming in and out, which is followed by a feeling of depth in the work. At the top of the work there is a unit that takes a hemispherical convex shape, which gives the impression of prominence in the work, and was formed of satin ribbons, "silky texture".

These units were installed on a background of linen fabric "soft texture" and we can notice the mixture between straight lines and circular and curved lines, which gave a diversity in the harmonious lines. The bottom of the artwork takes the form of straight lines executed using jeans fabric "rough texture" blue color and it touches the star shape. At the bottom of the work, a straight line extends to the top of the work in such a way that it hides behind the star shape at the top of the work.This line, which resembles a ribbon, was executed using a cotton bathrobe fabric with a "terry feel", while the star units were executed using a linen fabric with a "soft feel" and a "terry texture" Bashkir fabric', 'terry feel'

All those factors represented in the different color effects as well as the lines of work between straight, circular, and curved, as well as the different textures of fabrics "soft - silk - and terry" led to highlighting the diversity in the work. Furthermore, the difference in the technical methods used in the implementation of the work foregrounded the structural system in the work of art and highlighted the aesthetic aspect through the verification of fine values.

The Findings And Discussion

The results of the two hypotheses of the research are evident through the previous presentation of the description of the technical works of the researcher, as well as through the table that contains the arbitration clauses in two main axes that represent the result of the research hypotheses as follows:

A table showing the average contribution of raw technology to achieving organizational relationships& plastic art embroidered artifacts and their percentage.

Axles	Items	Average	Percentage	Average	Percentage
The role of material technology in achieving the structural system of	*The extent of the contribution of the materials used in achieving the structural systems of (conformity - similarity - difference) between the plastic elements.	4.4	88%	4.45	89%

	*The extent of the contribution of the technology of raw materials used in achieving the structural organizational relationships (juxtaposition - seam - overlap - intersection - interlacing) between the elements and the plastic elements	4.5	90%		
The role of raw technology and embroidery techniques in achieving fine values with embroidered work:	*The extent to which technical methods contribute to achieving harmony through diversity, repetition and replication	4.3	86%	**4.4**	**88%**
	* The extent to which technical methods contribute to achieving unity through the extent to which the design parts are integrated.	4.4	88%		
	*The extent to which technical methods contribute to achieving equilibrium	4.5	90%		
	*The extent to which technical methods contribute to achieving proportionality	4.4	88%		

Through the previous table, the validity of the first hypothesis of the research, which states that "there is a positive role for the technology of different materials for embroidery in achieving the organizational and plastic relations of the embroidered artifact" is verified, as its percentage in achieving structural systems and structural relations is 88% and 90%, respectively, and the general percentage is 89%. It is a high percentage that indicates the extent to which the technical methods used in achieving the structural system contribute to the embroidered works.

The second hypothesis, which states that "there is a positive role for raw materials technology in achieving fine artifacts with embroidered art," was proved to be true, as the percentage of plastic values such as harmony, unity, balance and proportion was 88%, which is a high percentage that indicates that these are good artistic works.

The results indicate that through the good use of technical methods, whether the materials used or the technical methods of embroidery, contributed to the achievement of structural systems and fine values in artistic works, which was reflected in the evaluation and arbitration of specialists for the executed works in question.

Conclusive Results

1- The plastic relations depend on the structural systems of congruence, similarity and difference between the plastic elements and material used, organized by structural relations within the artistic work of juxtaposition, contact, intersection, interlacing and overlapping.

2- The techniques used in the embroidered artifacts vary according to the plastic capabilities of the material that are related to its physical and chemical properties, and each material has the embroidery methods that correspond to it more than other materials.

3- Technical methods have a positive role in achieving plastic relations, whether constructive or structural, with embroidered artifacts.

4- Technical methods have a positive role in achieving the fine values of unity, balance, harmony and proportion to the embroidered artistic works.

Research Recommendations

1- Conducting various specialized research to develop formulations, methods and trends specific to the art of design and embroidery and its plastic dimensions, with the aim of strengthening it and perceiving it from a different artistic angle.
2- Practical experimentation in the art of embroidery should not be limited to the raw materials of textiles butit should allow for embroidery on many surfaces of different materials and textures, toachieve different aesthetic and functional purposes.
3- Benefiting from advanced methods in the field of hand embroidery, which are characterized by divergent creative thinking in terms of dealing with specific elements and investing it in relationships characterized by fluency and new vision.

Research Summary

Material technology and its impact on organizational and plastic relations in the design of embroidered work

The research deals with the material technology used by the plastic artist to implement the embroidered artwork through the adaptation and investment of different techniques for raw materials and the method of their plastic processing.
As well as the different techniques of embroidery art and its integration with the capabilities of the raw materials, and the extent of its impact on the organizational and plastic relations of the artistic work in terms of the structural system of the elements and plastic material, as well as the structural organizational relationships of the elements and the various artistic plastic material, taking into account the achievement of the fine values of balance, harmony, unity and proportion. Someartifactswere designed and analyzed to show the impact of raw materials and embroidery techniques on the structural system and the assorted values.
"The authors would like to thank the Deanship of Scientific Research at Umm Al-Qura University for supporting this work by Grant Code:**(22UQU4310368DSR01)** "

Refrences

Ahmed Hassan Ahmed: (1993) “Designing Decorative Panels Based on the Structural Foundations of Buttoned Castanets in Islamic Art” - Master’s thesis - College of Art Education - Helwan University.
Osama Qaoud: (2006) “Reciprocal Relations Between Postmodern Trends and Digital Design” - published research - the seventh annual scientific conference - Faculty of Specific Education - Mansoura University.
Amal Owais Saber: (2004) Introducing Contemporary Designs for Embroidery Through the Plastic Vocabulary of Islamic Art - PhD thesis - Faculty of Specific Education - Ain Shams University.
Iyad Hussein Abdullah (2008): The Art of Design in Philosophy, Theory and Application - Part 3 - Department of Culture and Information - Sharjah.
Ehab Bismarck Al-Saifi (1998): Aesthetic and Structural Foundations of Design (Formal Elements Activities) - Egyptian writer for printing and publishing – Cairo
Jassia Richard: (1974) - Translated by Omar Makkawi - Journal of Science and Society - Issue 16.
Hussein Hajjaj: (2006) “Decorative Ethnography between Idea and Design Construction in the Works of the Generation of Egyptian Pioneers” - published research - the seventh annual scientific conference - Faculty of Specific Education - Mansoura University.
Hamda Muhammad: (1965) Embroidery in Textiles and Decoration - Anglo-Egyptian Library.
Doaa Fathi Mustafa Abdel Hamid: (2008) Experimental Approaches to the Synthesis of Different Fabrics to Enrich the Woven Appliqué Aesthetically and Functionally - MA - Faculty of Specific Education - Ain Shams University
Rahma Ali Ali Al-Din Khalil: (2005) A program in museum education to develop the fine ability of the museum educator in leather works - Faculty of Art Education, Helwan University
Samia Abdel Aziz: (1972) Beads in the Arab Republic of Egypt - Master's Thesis - College of Art Education - Helwan University.
Souad Maher: (1969) The Scene of Imam Ali in Najaf and its Gifts and Antiques - House of Knowledge - Library of the Institute of Islamic Archeology - Cairo.
Saeed Al-Watiri (1988): “The Foundations of Design and its Role in Developing the Creative Capabilities of the Designer” - Helwan University Press - Cairo.
Sayed Rabie Sayed: (2010) “The plastic Relations Arising from the Mutual Influence Between Surfaces and Models in Contemporary Woodwork in Light of the Concept of Potential Energy” unpublished doctoral thesis - Faculty of Specific Education - Ain Shams University.
Ali El-Meligy: (2001) Formation Skills in Art Education - Cairo University Press.
Karama Thabet Hassan Al-Sheikh: (2000): “An Analytical Study of the Art of Synthesizing Raw Materials in the Egyptian Heritage and Making Use of it in Contemporary Fashion Design” - an unpublished master’s thesis - Department of Home Economics - Faculty of Home Economics, Helwan University.
Muhammad Hussein Judy: (1984) Art Education in Secondary School - Al-Maaref Press - Baghdad.

Mahmoud El-Bassiouni: (1998) Foundations of Art Education - (I 1) - Dar Al-Maaref - Cairo.
Mustafa Farid Al-Raz (1981): “The Foundations of Design Between its Structural Reality and its Perceptual Dimension” - Arts Sciences
Maha Ahmed Abdel Aziz: (1997) “A Comparative Study of Some Methods of Manual and Automatic Embroidery on Modern Textile Fabrics and Benefiting from Them in the Field of Small Projects” - Master’s thesis - Faculty of Home Economics - Helwan University.
Nadia Mahmoud Khalil: (1999) A study of the effect of adornment supplements on fashion in the Islamic era Master's thesis 1983, Home Economics - Helwan University.
Nathan Knobler (1987): Dialogue of Vision - An Introduction to Art Tasting and Aesthetic Experience - Translated by Fakhri Khalil - Dar Al-Mamoun - Baghdad.
Nafeesa Abdel Rahman: (1997) The Effect of Embroidery Methods on Plain, Atlantic and Wool Weaving - Comparative study - Master's thesis - Faculty of Home Economics - Helwan University.
Yousra Moawad Issa (1990): Preparing a proposed curriculum for fashion design - Clothing and Textile Division - unpublished master's thesis - Faculty of Home Economics - Helwan University.
Yousra Moawad Issa Ahmed (2011): “The Rules and Principles of Fashion Design” - World of Books - Cairo.
Edith John: (1998) Creative Stitches, dover publications.
Enthoven, Jacqueline: (1964) World Textiles, Paris.
Gostelow Mary: (1982) The Essential Guide to Embroidery- uk.
J. Brockman (1995): Pioneer of Swiss Graphic Design-Bern, CH: Lars Muller.
Winifred Butler: (1991) The Creative Art of Embroidery, New York.
Wucius Wong (1972): Principles of Two-DimensionalDesign, No strand Reinhold Company, New York.

Author Information

Dr. Amal Owais Saber Abdelkader
Professor of Clothing and Textiles, Department of Family Education - Al-Leith University College, Umm Al-Qura University
AndProfessor of clothing and textiles, Faculty of Specific Education - Fayoum University