Using Digital Technology Applications to get All Possible Color Effects of Goblein Fabrics

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Abstract:

Gobelin fabrics are one of the oldest weaving methods used in the production of furnishings and hanging fabrics Which was known in the past as the Tapestry.Gobelin designs were dominated by a stereotyped character, no longer meeting the needs of consumers, and with the development of our current world was also accompanied by a great development in the field of textiles. Gobelin fabrics began to develop in line with the development that has occurred in the field of digital technology, where the use of digital technology in the field of textiles has provided very great advantages to this field, In our research, we review one of the applications of digital technology, which allowed us to obtain the largest possible number of color effects, which are close to those that can be obtained from printed fabrics, as well as create innovative designs that are implemented in the Goblin style and apply these effects to them.

Key words:

Gobelin Fabrics, Digital Technology, Color Effects, Innovative Designs, Textile Structures.

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Introduction:

With the development of the development of our current world, there has also been a great development in the field of textiles, where this development has entered significantly in the field of textile printing and woven fabrics have become strongly competitive as we can get many color effects that can be obtained in printed fabrics.

It was only a matter of time until digital design technology introduced innovation in the design and production of jacquard textiles and, for example, over the past years, many research have been conducted in computer-aided design via digitization technology with the aim of improving the efficiency of jacquard fabric design.

We can obtain many colors effects equivalent to color effects in printing using a variety of techniques, including the Goblin style, which differs from printed fabrics in the tangible value of fabrics as they become richer through textile combinations and color exchange used in warp and weft. One technique used in Goblin is to combine four different warp colors with three different weft colors using a single textile structure, as our research will discover.

Research Problem

- Adoption of local executive methods of Goblin fabrics on traditional historical methods, resulting in the product's low competitiveness in local and global markets.
- The difficulty in gaining access to all possible color effects in Goblin fabrics.
- The difficulty of choosing textile structures due to the multiplicity of available alternatives.

Aim of the research:

This research aims to:

- Access to all possible color effects in Gobelin fabrics.
- Obtaining color effects for jacquard fabrics similar to those of printed fabrics by using digital technology.
- Producing Gobelin fabrics executed in an innovative manner with new aesthetic values.

Research importance:

- Using digital technology to develop methods of Gobelin fabrics.
- The possibility of obtaining color effects for jacquard fabrics like those of printed fabrics using digital technology.

Research field:

Digital Technology Applications and Textile Design

Research Methodology:

The research follows the practical methodology.

Previous Studies:

1. Gobelin Fabrics:

1.1 Description of Gobelin fabrics

Gobelin fabric is expressed as a textile product which is created with special technique. this type of weaving is distinguished by the fact that its decoration is made up of wefts that are not extended across the width of the weaving and are not intermittent. (BTLICH, 1991).

Goblin fabrics are considered one of the oldest textile methods, and it is distinguished by the production of designs that express expressive themes, ancient myths, and traditional landscapes. Where design details appear on the fabric's surface by interweaving the warp and weft to achieve different mixing ratios. and thus, on infinite color gradations resulting from the choice of warp color, weft thread color with which it is interwoven, and interlacing method. The color and texture required to show the design are obtained using a Jacquard loom, the strength of which is proportional to the number of variations in the design. (غادة محمد الصياد، ٢٠١٩) Tapestry was originally a decorative fabric made of warp and swivel wefts that could only be made by hand (the technique was known as KeSi in ancient China. (صبرى سنجر، ٢٠١٦) When weaving and patterning machines were used to mass produce tapestry, woven construction with a through warp and through weft became popular throughout Europe.

1.2 Evaluation of the term goblin fabrics:

The term was used by Gobelin Jean, one of the most famous textile merchants and dyers in France in 1450. Due to the success and superiority of Gobelin's textile factories in Paris, the search for Gobelin has become a name given to this type of wall hangings.(عبدالحليم، ١٩٩٠)

There are three basic terms that can be distinguished here: Tapestries, Carpets, and Rugs. Opission (Tapestry) is known as simple interweaving between vertical warp threads and transverse weft threads in "Kilim". The design or desired image is created because of the interlocking of the warp and weft, and by changing the thicknesses and colors of the warp and weft, the final image of the design becomes clear. On the one hand, the tapestries can be distinguished from the Gobelin. (Kane, 2004)

The goblin reflects the method used in the production of tapestry. The colors of the warp are responsible for the decoration in the goblin, whereas the colors of the weft are responsible for the decoration. (Omalley & Omalley, Charles J., 14 june 2016)

Fig (1) Shows the structural form of the tapestry.

1.3 Applications of Goblin fabrics (upholstery fabrics -wall hangings):

Gobelin fabrics are decorative fabrics and are one type of jacquard fabrics. It is performed on weaving machines equipped with jacquard devices, allowing the creation of decorative patterns with different effects and a wide range of different weaving shapes. There are numerous executive methods for producing this type of fabric, as well as numerous applications for it. (عادل أبوخزيم، ٢٠١٩)

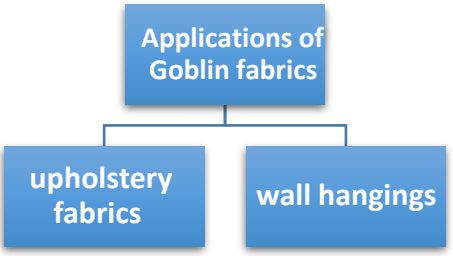

Fig (2) illustrates Applications of Goblin fabrics.

1.3.1 Uses of goblin fabrics in upholstery fabrics:

Fabrics vary the furnishing in its nature, the nature of its design, and the rest of the types of production, its production. (طارق سعيد صالح، ١٩٩٥)

This difference is due to specific factors of nature Use those type of coloums. (مريم زكريا ابراهيم، ٢٠١١)

Goblin fabrics are used in upholstering chairs, armchairs, and sofasTo expose it during upholstery to pulling and pulling or for final use by sitting on it for long periods, so it must be characterized by durability. (فاتن محمد عساكر، ٢٠٠٤)

Fig (3) Models of the designs of Goblin fabrics used in fabrics.

1.3.2 Uses of goblin fabrics in hanging fabrics:

Wall hangings can have a variety of uses:

- The wall hangings perform the function of artistic and aesthetic expression on a specific topic: Topics of life, heritage, or depiction of religious or worldly stories.
- The wall hangings perform the function of works of art in some architectural destinations but inside the building, there is a special artistic feeling in the place or explain an important topic.
- The wall hangings perform an artistic and aesthetic function in giving a sense of the spaciousness of the place in which the walls are adorned.

Textile wall hangings are divided according to the executive method used in their production:

- Non-woven wall hangings (manual tapestry - automatic goblin).
- Hanging wool (semi-mechanical carpets - automatic carpets-carpets). (الفار، ١٩٩٣)

Fig (4) A model of the designs shows the Goblin fabrics used in fabrics (Pendants)

2. Digitization technology:

Digital image design, which makes use of digitization technology, is more efficient in design processing and more compatible with design applications. Digital photos can provide more attractive and imaginative effects than those created by hand. As a result, digital images are well suited to the fast-paced commercial design industry's rising desire for creativity and originality. Digital imaging technology has received significant investment and resources because of its popularity, particularly in the filmmaking sector.

2.1 Digital technology in textiles:

It was just a matter of time until digital design technology introduced innovation to jacquard textile design and production. For example, over the last 10 years, research has been conducted to investigate computer-aided design via digitization technology with the goal of improving the design efficiency of jacquard fabric. However, due to the unresolved constraints of plane design mode, the design of jacquard textiles has remained unchanged, and digital image design via CAD has only been used to replace hand-drawn patterns and point papers; digital technology has not been directly applied to the creation of jacquard textile designs. Because the fabric's structural design is so crucial in the fabrication of jacquard textiles, an attempt has been made in this book to bring innovation to traditional structural design principles and processes using digitalization technology.

For jacquard fabrics as well as woven fabrics with opaque yarns an overview of the jacquard textile design process. When colour threads are used, the resulting colour impact on the fabric's face is vulnerable to optical colour mixing. Jacquard fabric design is a mechanical replication in a single-plane design method that seeks to mimic the colour and pattern effects of hand paintings, according to tradition. Color and the woven structure of the fabric's possibilities for aesthetic innovation have been generally ignored and underexplored. Nonetheless, the creative and commercial significance of inventive jacquard textile design and production remains a rich research field. (Zhou J. a., 2006)

2.2 The use of digital technologies in jacquard textile design

One of the most important study directions in modern textile technology and science is digital textile design. The creation of novel textile items has artistic as well as commercial importance. Digital printed textiles research is currently attracting worldwide interest and has delivered promising results in commercial applications. Digital jacquard textile research, on the other hand, is still in its early stages, owing to the complexities of digitization processing for a woven structure. The colour and pattern effect of jacquard fabric can only be realised through its woven structure because it is interwoven with warp and weft threads. Fabric structure innovation is thus critical to future jacquard fabric design innovation. To that end, the research described in this book sought to

develop new design concepts, principles, and related design methods in jacquard. (Zhou J. , 2001)

2.3 Aims of using digital technologies to innovate jacquard fabric:

The following are the specific goals of using digital technologies to innovate jacquard fabric:

1. To use digitization technology to re-invent the concept, methods, and procedures of jacquard textile design to replace the traditional design mode.
2. To investigate and expand the creative dimension of woven textile structures and their color expression using digital design principles and methods.
3. To investigate optimal structural design methods based on the layered-combination design mode.
4. To build a theoretical framework for the design and creation of digital jacquard fabric, in which a series of weave-databases are established, allowing for the design and production of digital jacquard fabric under a variety of processing conditions and fabric technical parameters.
5. To create sample jacquards to demonstrate and explain the simulated and innovative effects of digital jacquard textile design. (Zhou J. a., 2006)

The fabric woven in this manner had color effects like hand-made tapestry and was described as having a 'woven tapestry structure.' Since then, woven tapestry has become a popular multicolored woven fabric in the Western world, and it is still widely used today. It is typically a yarn-dyed product made of cotton, linen, and/or woolen materials that is widely used in upholstery and clothing textiles. To achieve a rich color expression, four to six colored yarns are used in the warp direction and two to four in the weft direction. The color effect of woven tapestry is formed by interlacing warp and weft points and is determined by the fabric structure and the colors of the warp and weft threads. The color effect of woven tapestry is formed by interlacing points of the warp and weft and is dependent on the fabric structure and the colors of the warp and weft threads. (Charlin, 2003)

(I) The colors in four-warp fabric are red, yellow, blue, and green, while the weft colors are black, white, and silver-grey (silver-grey is used for weft stitching).
(ii) The colors in the five-warp fabric are red, yellow, blue, green, black, or white, and the weft colors are black, white, and silver-grey (for stitching the weft).
(iii) The warp colors in six-warp fabric are red, yellow, blue, green, black, and white, and the weft colors are black, white, and silver-grey (for stitching the weft).
The primary colors of multicolored woven tapestry cloth are red, yellow, blue, and green. On the face of a fabric, the fundamental and mixed colors produce the color and figured effect, while black and/or white are utilized to modify the brightness and saturation of the mixed woven colors. Color palettes for choosing warp colors are created by extending the fundamental colors to the serial colors, with each fundamental serving as the center. Textile designers can now handle thousands of color-mixture effects. The weft group's basic colors are black and white, but they can be expanded to include dark and light colors. (Zhao, 1992)
Because they have little influence on the face-color effect, neutral colors are the best choice for stitching wefts. When the warp group consists of four to six colors, three coloration methods can be used to design woven fabrics with mixed colors: single warp coloration, double warp mixed coloration, and three warp mixed coloration. For example, in tabby weave, the appropriate warp color principle and the number of warps colors are specified as follows, where N represents the number of warp groups. (Zhou J. a., 2007c)
Coloring method of single color: $\mathbf{C^1_N = N}$
Coloring method of double-color: $\mathbf{C^2_N = N\,(N-1)/\,(1\times 2)}$
Color development method of three-color:
$\mathbf{C^3_N = N\,(N-1)\,(N-2)/\,(1\times 2\times 3)}$
When three wefts are employed in the weft direction, the additional warp may interlace with the stitching weft. Where the warp color on the stitching weft does not consist of more than two colors, the calculation of Eq. 2.1 should be multiplied with $\mathbf{C^1_{N-1} + C^2_{N-1}}$ the result of Eq. 2.2 multiplied

with $\mathbf{C^1_{N-2} + C^2_{N-2}}$; and the result of Eq. 2.3 multiplied by $\mathbf{C^1_{N-3} + C^2_{N-3}}$ **or** $\mathbf{C^1_{N-3}}$ **(N=4).**

When the warp color principle and the color number are applied to two weft colors, black and white, respectively, the coloring number on the fabric surface calculated above is re-duplicated.

Using four-color warps and three-group wefts as an example, the mixed color number on the fabric surface will be as follows under the same weave structure:

$$\mathbf{[C^1_N \times (C^1_{N-1} + C^2_{N-1}) + C^2_N \times (C^1_{N-2} + C^2_{N-2}) + C^3_N \times C^1_{N-3}] \times 2 = [4 \times (3 + 3) + 6 \times (2 + 1) + 4 \times 1] \times 2 = (24 + 18 + 4) \times 2 = (colors)}$$

As a result, a tapestry with four-color warps and three-group wefts will have 92 different mixed colors created by changing the combination of warp colors within the same weave structure. When the fabric construction is changed to five or six-color warps, the resulting colors are 280 and 720, respectively. However, due to the limitations of manual labor and the complexity of the structural design, it is impractical to have more than 100 colors available. Even when CAD systems are used, if the plane design mode is used, the color expression will fall short of the ideal effect, both theoretically and practically. (Yu, 2008)

Experimental Work

This search aims to Color alternatives that can be obtained using four warps & Three wefts:

- One of the techniques used in Gobelin is how to achieve all possible color effects by combining four different warp colors with Three different weft colors using a single textile structure, and this is what our research will uncover.
- Four warp colors and Three weft colors were used in this type.
- The warp colors were arranged in the following order: yellow, green, blue, and red.
- The weft colors were arranged in the following order: silver-grey, white, and black (silver-grey is for stitching the weft).

- Plain and its derivatives weave structures are used for the facial and back layers.
- All the color effects that can be obtained by using four warp colors and three weft colors with the textile structure of its derivatives are listed below.

1. Examples of Face color effect

As shown in Fig (5) &Table (1) of (Group 1) , Fig (6) &Table (2) of (Group 2), Fig (7) &Table (3) of (Group 3) and Fig (8) &Table (4) of (Group4), these are examples of color effects that we can be obtained from using four colors of warp and three colors of weft.

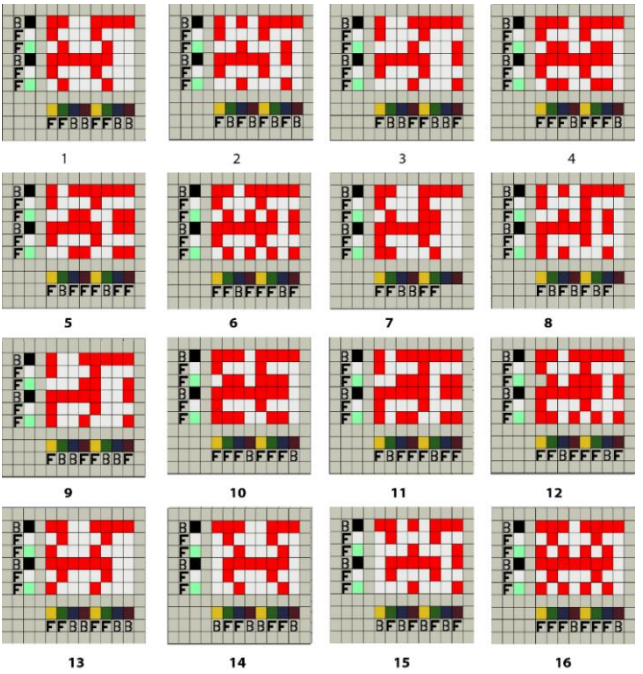

Fig (5) (Group1), The weave structures represent the appearance of face color effect.

Table (1), Description of structures that represent the appearance of face color effect in (Group 1)

1: warp 1with weft 2 & warp 2 with weft 1	2: warp 1with weft 2 & warp 3 with weft 1
3: warp 1with weft 2 & warp 4 with weft 1	4: warp 1with weft 2 & warp 2&3 with weft 1
5: warp 1with weft 2 & warp 3&4 with weft 1	6: warp 1with weft 2 & warp 2&4 with weft 1
7: warp 1with weft 1&2 & warp 2 with weft 1	8: warp 1with weft 1&2 & warp 3 with weft 1
9: warp 1with weft 1&2 & warp 4 with weft 1	10: warp 1with weft 1&2 & warp 2&3 with weft 1
11: warp 1with weft 1&2 & warp 3&4 with weft 1	12: warp 1with weft 1&2 & warp 2&4 with weft 1
13: warp 2 with weft 2 & warp 1 with weft 1	14: warp 2 with weft 2 & warp 3 with weft 1
15: warp 2 with weft 2 & warp 4 with weft 1	16: warp 2 with weft 2 & warp 1&3 with weft 1

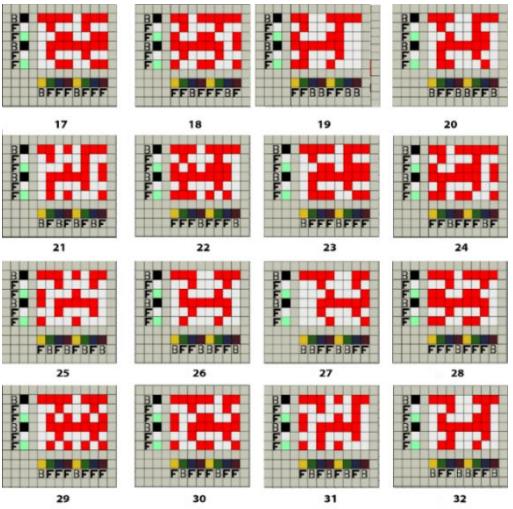

Fig (6) (Group 2), The weave structures represent the appearance of face color effect.

Table (2), Description of structures that represent the appearance of face color effect in (Group 2)

17: warp 2 with weft 2 & warp 3&4 with weft 1	18: warp 2 with weft 2 & warp 1&4 with weft 1
19: warp 2 with weft 1&2 & warp 1 with weft 1	20: warp 2 with weft 1&2 & warp 3 with weft 1
21: warp 2 with weft 1&2 & warp 4 with weft 1	22: warp 2 with weft 1&2 & warp 1&3 with weft 1
23: warp 2 with weft 1&2 & warp 3&4 with weft 1	24: warp 2 with weft 1&2 & warp 1&4 with weft 1
25: warp 3 with weft 2 & warp 1 with weft 1	26: warp 3 with weft 2 & warp 2 with weft 1
27: warp 3 with weft 2 & warp 4 with weft 1	28: warp 3 with weft 2 & warp 1&2 with weft 1
29: warp 3 with weft 2 & warp 2&4 with weft 1	30: warp 3 with weft 2 & warp 1&4 with weft 1
31: warp 3 with weft 1&2 & warp 1 with weft 1	32: warp 3 with weft 1&2 & warp 2 with weft 1

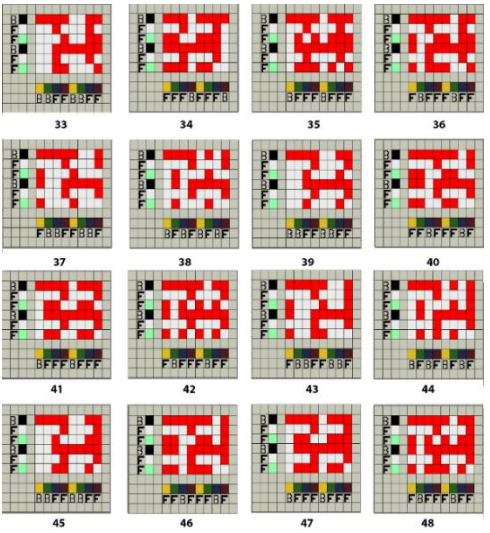

Fig (7) (Group 3), The weave structures represent the appearance of face color effect.

Table (3), Description of structures that represent the appearance of face color effect in (Group 3)

33: warp 3 with weft 1&2 & warp 4 with weft 1	34: warp 3 with weft 1&2 & warp 1&2 with weft 1
35: warp 3 with weft 1&2 & warp 2&4 with weft 1	36: warp 3 with weft 1&2 & warp 1&4 with weft 1
37: warp 4 with weft 2 & warp 1 with weft 1	38: warp 4 with weft 2 & warp 2 with weft 1
39: warp 4 with weft 2 & warp 3 with weft 1	40: warp 4 with weft 2 & warp 1&2 with weft 1
41: warp 4 with weft 2 & warp 2&3 with weft 1	42: warp 4 with weft 2 & warp 1&3 with weft 1
43: warp 4 with weft 1&2 & warp 1 with weft 1	44: warp 4 with weft 1&2 & warp 2 with weft 1
45: warp 4 with weft 1&2 & warp 3 with weft 1	46: warp 4 with weft 1&2 & warp 1&2 with weft 1
47: warp 4 with weft 1&2 & warp 2&3 with weft 1	48: warp 4 with weft 1&2 & warp 1&3 with weft 1

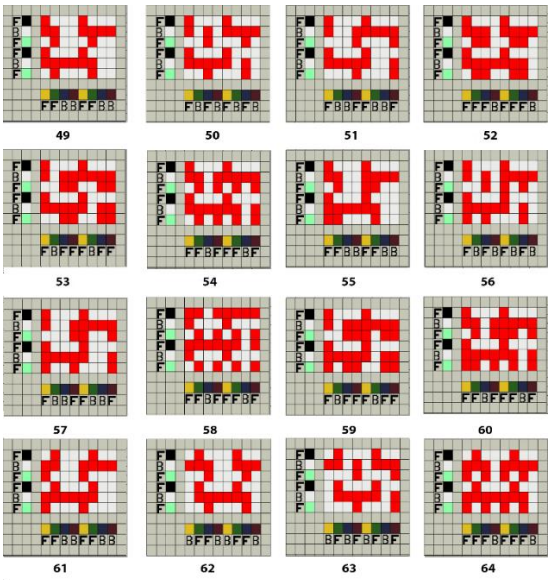

Fig (8) (Group 4), The weave structures represent the appearance of face color effect.

Table (4), Description of structures that represent the appearance of face color effect in (Group 4)

49: warp 1 with weft 3 & warp 2 with weft 1	50: warp 1 with weft 3 & warp 3 with weft 1
51: warp 1with weft 3 & warp 4 with weft 1	52: warp 1 with weft 3 & warp 2&3 with weft 1
53: warp 1 with weft 3 & warp 3&4 with weft 1	54: warp 1 with weft 3 & warp 2&4 with weft 1
55: warp 1 with weft 1&3 & warp 2 with weft 1	56: warp 1 with weft 1&3 & warp 3 with weft 1
57: warp 1with weft 1&3 & warp 4 with weft 1	58: warp 1with weft 1&3 & warp 2&3 with weft 1
59: warp 1with weft 1&3 & warp 3&4 with weft 1	60: warp 1with weft 1&3 & warp 2&4 with weft 1
61: warp 2 with weft 3 & warp 1 with weft 1	62: warp 2 with weft 3 & warp 3 with weft 1
63: warp 2 with weft 3 & warp 4 with weft 1	64: warp 2 with weft 3 & warp 1&3 with weft 1

2. Color effects for using four warps and three wefts.

a. Creating a color palette for the maximum possible number of color effects that can be obtained from using four colors of warp and three colors of weft as shown in Fig (9).

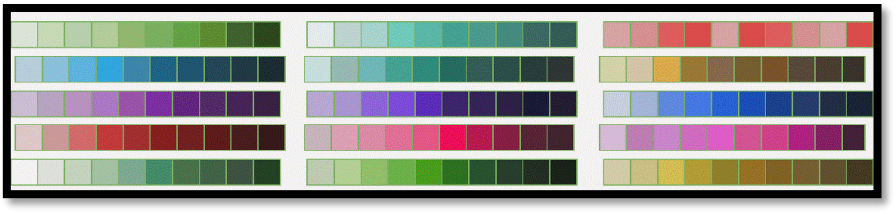

Fig (9) Color palettes obtained from using four colors of warp and three colors of weft

b. Making the executed technical drawing of the color palette containing the maximum possible number of color effects that can be obtained from using four colors of warp and three colors of weft.

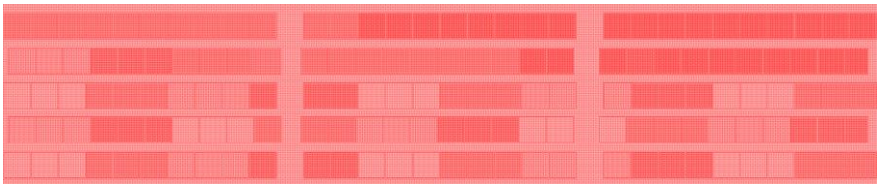

Fig (10) The executed technical drawing from using four colors of warp and three colors of weft.

c. A picture of the samples of the executed color pallettes containing the maximum possible number of color effects can be obtained from the use of four colors of warp and three colors of weft.

Fig (11) Samples of the executed color pallettes

3. Experimental designs with four warps & three wefts:

Executive illustration of Design 1of four colors of warp and three colors of weft.

Design 1:

Fig (12) Design (1) of the executed samples

From the work of the researcher
Design dimensions: 80 cm * 110 cm
Function: Hanging fabrics
Description: Inspiration from natural textures and transforming them into free abstract spaces.
Number of colors used: Eight colors.
Color mirage: Blue, Red & Green, as shown in Fig (13)

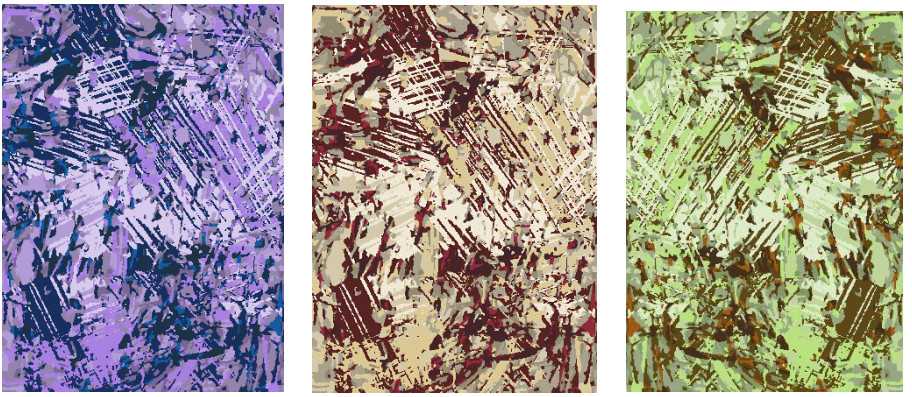

Fig (13) Color mirages of Design 1

Technical Analysis of Design 1: The composition here achieved the goal of the researcher in feeling the texture inspired by nature as an essential element in this design, and to realize the balance and sense of the fluidity of the elements and their overlap through the following elements:

- **Color:** The diverse color spaces here play a key role in diversity and balance. They are diverse in terms of area and size, agglomeration and fragmentation, intensity, and intensity of color in the gradation of color spots shown dark and light.
- **Font:** It does not play a role in design because it depends mainly on shapes and spaces.
- **Texture:** Texture is central to eye feeling in this design, The feeling of cracking and fragmentation and then agglomeration through the change in the spaces and shapes belonging to it.

- **Shape:** The irregularity of the shapes and the disturbance of their area and boundaries tend to form a reference in its inspiration from nature.
- **Space:** Color spots and agglomerations of shapes and their fragmentation result in a comfortable space for the eye that is manifold in the basis of the design in general.

Executive Design Analysis: Weave structures and technical design.

- **Weave structures for design 1:**

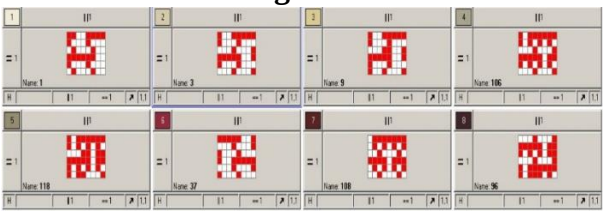

Fig (14) Structures for Design (1)

- **Technical drawing for design 1:**

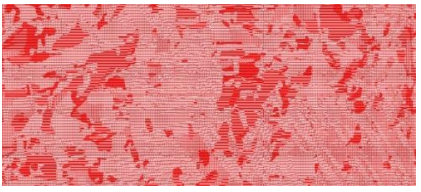

Fig (15) Part of technical drawing for design (1)

Design 2:

Fig (16) Design 2

From the work of the researcher
Design dimensions: 80 cm * 110 cm
Function: Hanging fabrics
Description: Inspiration from natural textures and transforming them into free abstract spaces.
Number of colors used: Ten colors.
Color Mriage: Blue, Red & Green, as shown in Fig (17)

Fig (17) Color mirage

Technical Analysis of Design 1: The composition here achieved the goal of the researcher in feeling the texture inspired by nature as an essential element in this design, and to realize the balance and sense of the fluidity of the elements and their overlap through the following elements:

- **Color:** The diverse color spaces here play a key role in diversity and balance. They are diverse in terms of area and size, agglomeration and fragmentation, intensity, and intensity of color in the gradation of color spots shown dark and light.
- **Font:** It does not play a role in design because it depends mainly on shapes and spaces.
- **Texture:** Texture is central to eye feeling in this design, The feeling of cracking and fragmentation and then agglomeration through the change in the spaces and shapes belonging to it.

- **Shape:** The irregularity of the shapes and the disturbance of their area and boundaries tend to form a reference in its inspiration from nature.
- **Space:** Color spots and agglomerations of shapes and their fragmentation result in a comfortable space for the eye that is manifold in the basis of the design in general.

Executive Design Analysis: Weave structures and technical design.

Weave structures for design 2:

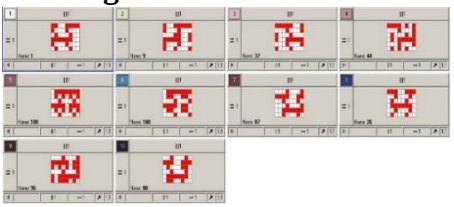

Fig (18) Structures for Design (2)

Technical drawing for design 2:

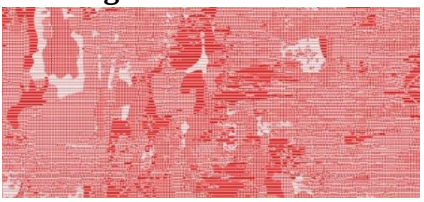

Fig (19) Part of technical design for design (2)

Design 3:

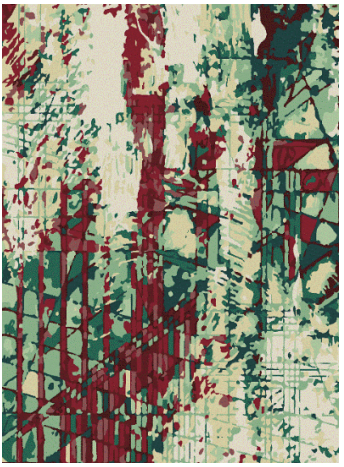

Fig (20) Design 3

From the work of the researcher
Design dimensions: 80 cm * 110 cm
Function: Hanging fabrics
Description: Inspiration from natural textures and transforming them into free abstract spaces.
Number of colors used: Ten colors.
Color mirage: Blue, Red & Brown, as shown in Fig (21)

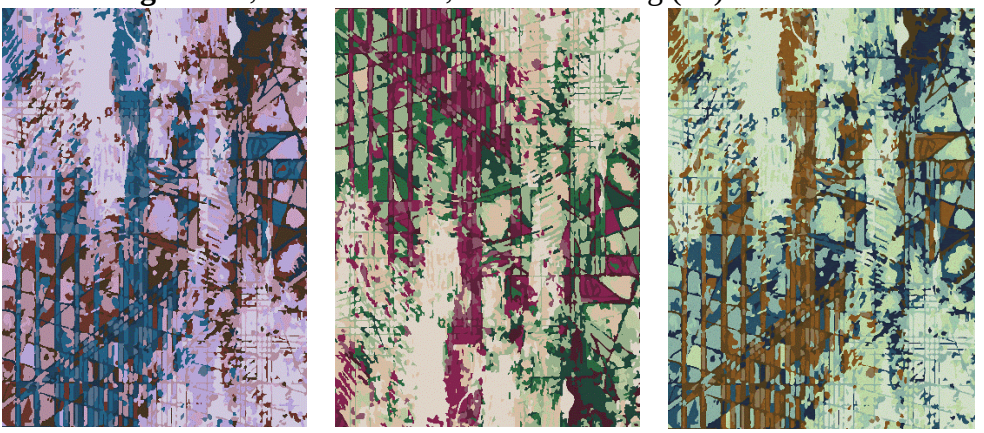

Fig (21) Color mirages of design 3

Technical Analysis of Design: The composition here achieved the goal of the researcher in feeling the texture inspired by nature as an essential element in this design, and to realize the balance and sense of the fluidity of the elements and their overlap through the following elements:

- **Color:** The diverse color spaces here play a key role in diversity and balance. They are diverse in terms of area and size, agglomeration and fragmentation, intensity, and intensity of color in the gradation of color spots shown dark and light.
- **Font:** It does not play a role in design because it depends mainly on shapes and spaces.
- **Texture:** Texture is central to eye feeling in this design, The feeling of cracking and fragmentation and then agglomeration through the change in the spaces and shapes belonging to it.
- **Shape:** The irregularity of the shapes and the disturbance of their area and boundaries tend to form a reference in its inspiration from nature.

- **Space:** Color spots and agglomerations of shapes and their fragmentation result in a comfortable space for the eye that is manifold in the basis of the design in general.

Executive Design Analysis: Weave structures and technical design.

Weave structures for design 3:

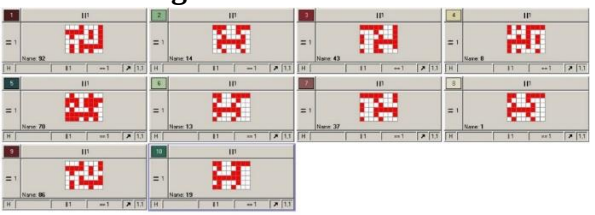

Fig (22) Structures for Design (3)

Technical drawing for design 2:

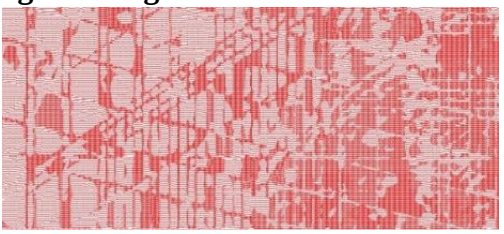

Fig (23) Part of technical design for design (3)

Design 4:

Fig (24) Design 4

From the work of the researcher
Design dimensions: 80 cm * 110 cm
Function: Hanging fabrics
Description: Inspiration from natural textures and transforming them into free abstract spaces.
Number of colors used: Ten colors.
Color mirage: Blue, Red & Green, as shown in Fig (25)

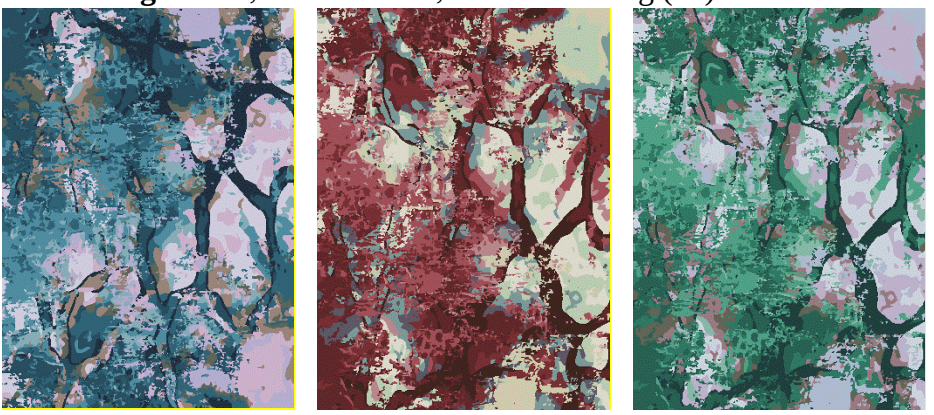

Fig (25) Color mirage

Technical Analysis of Design: The composition here achieved the goal of the researcher in feeling the texture inspired by nature as an essential element in this design, and to realize the balance and sense of the fluidity of the elements and their overlap through the following elements:

- **Color:** The diverse color spaces here play a key role in diversity and balance. They are diverse in terms of area and size, agglomeration and fragmentation, intensity, and intensity of color in the gradation of color spots shown dark and light.
- **Font:** It does not play a role in design because it depends mainly on shapes and spaces.
- **Texture:** Texture is central to eye feeling in this design, The feeling of cracking and fragmentation and then agglomeration through the change in the spaces and shapes belonging to it.
- **Shape:** The irregularity of the shapes and the disturbance of their area and boundaries tend to form a reference in its inspiration from nature.

- **Space:** Color spots and agglomerations of shapes and their fragmentation result in a comfortable space for the eye that is manifold in the basis of the design in general.

Executive Design Analysis: Weave structures and technical design.

Weave structures for design 4:

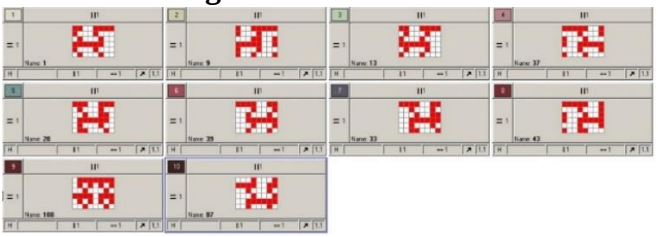

Fig (26) Structures for Design (4)

Technical drawing for design 4:

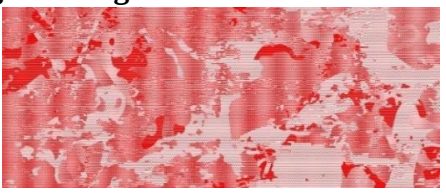

Fig (27) Part of technical design for design (4)

4. live samples of the executed designs:

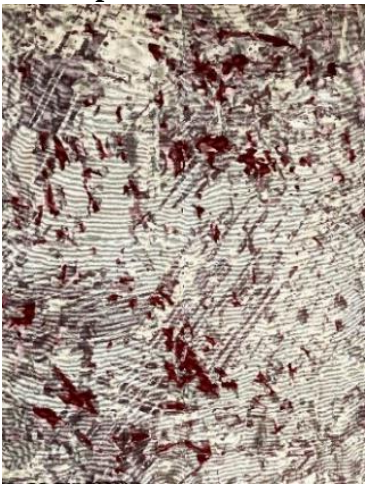

Fig (28) Produced Sample of Design1 1

Fig (29) Part of Produced Sample of Design 1

Fig (30) Produced Sample of Design 2

Fig (31) Part of Produced Sample of Design 2

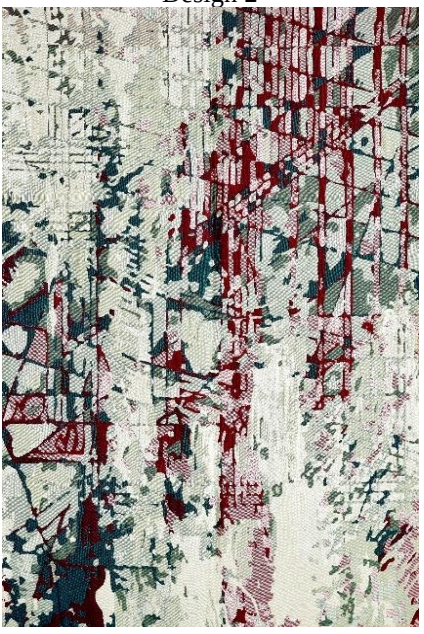

Fig (32) Produced Sample of Design 3

Fig (33) Part of Produced Sample of Design 3

Fig (34) Produced Sample of Design 4

Fig (35) Part of Produced Sample of Design 4

5. Executive specifications Machine and Fabrics which used in producing samples:

5.1 Specification of the loom which used in producing samples:

The production of Gobelin fabricswas carried out in Textile Design Center in faculty of Applied Arts, Helwan University. The Specification of the looms used for producing samples are shown in the table (5):

Table (5) Loom specification

No	Item	Specifications in Textile Design Center
1	Loom Type	ITEMA
2	Loom Model	R 9500
3	Manfucture Countery	Italy
4	Manfucture Year	2014
5	Machine Width	190 cm
6	Loom speed	350 p/min
7	Weft selector	With 8 fingers
8	Weft insertion	Rapier

5.2 Specification of the Jacquard which used in producing samples:

Table (6) Jacqurad specification

No	Item	Specifications in Textile Design Center
1	Jacquard Name	BONAS
2	Jacquard Model	L16 (Electronic)
3	Manfucture Countery	BELGIUM
4	Manfucture Year	2014
5	Jacquard Hooks	6144 hooks
6	Design Hooks	5800 hooks
7	Rpeat number	One rpeat
8	Width of Harness Tie Rpeat	161.1 cm
9	Fabric Width without Selvedge	161.1 cm
10	Fabric with Width Selvedge	163.1 cm
11	The Methhod	36 yarn/cm
12	Reed used	9 dent/cm
13	Denting	4 ends/dent

5.3 Basic specification of the produced samples:

Table (7) Fabric samples specification

No	Item	Warp Specifications	Weft Specifications
1	Material	Polyester	Polyester/Cotton
2	Color Arrangment	Yellow/green/Blue/Red	Yellow/White/Black
3	Denisty	36 Ends/cm	24 Weft/cm
4	Count	300 Denier	150 T_d/6/2 Ne/6/2 Ne

6. Results:

According to the previous data in the research, the following results were obtainted:

1- We can get all possible color alternatives from using 4 colors of warp and 3 colors of weft.

2- Using unconventional designs for Gobelin fabrics.

3- The diversity in the programs used helped in the ease of creating designs using various distribution methods that achieve the different elements of the design foundations.
4- The use of digital technology allowed us to simulate designs and choose the best before implementing them, using specialized programs.
5- The use of digital technology allowed us to employ the selected designs that were implemented.
6- Ease of creating composite histological structures using specialized programs.

Conclusion:

The researcher made a fusion between digital technology and textiles, based on what was mentioned in the research, some important conclusions were drawn, namely the possibility of obtaining all possible color alternatives from the use of 4 colors of warp and 3 colors of weft. We were also able to use unconventional designs for goblin fabrics,

The diversity of the programs used also helped to facilitate the creation of designs using various distribution methods that achieve the different elements of the design foundations. The use of digital technology has also allowed us to simulate designs and choose the best before implementing them, using specialized software, and employing the selected designs that have been implemented. And the ease of creating composite textile structures. The researcher also explained that he also used these designs as pendants and followed new artistic trends in the work of designs and not the traditional recognized for Goblin fabrics.

References

المراجع الأجنبية

BTLICH. (1991). (The Illustrated History of Textiles).

Charlin, J.-C. (2003). The Story of the Jacquard Machine: From its Origins to the Present .

Kane, T. (2004). Tapestry Technology. Textile Society of America Symposium Proceedings.

Omalley, C. J., & Omalley, Charles J. (14 june 2016). A Visit To Gobelins. Journal of the Textile Institute Proceedings.

Yu, W. M. (2008). Full-color digital jacquard. Hong Kong: Fengi.

Zhao, F. (1992). History of Silk Art. Hangzhou: Zhejiang Art Press.

Zhou, J. (2001). Standardized Technological Design for Yarn-dyed Jacquard Upholstery .

Zhou, J. a. (2006). Innovative Principle and Method of Colourful Digital Jacquard Fabric Design. Journal od Textile Research, 6-9.

Zhou, J. a. (2007c). Design Principle and Method on True-to-original.

المراجع العربية

حسن عبد العزيز الفار. (١٩٩٣). استخدام الحاسب الآلي فى تصميم المنسوجات المطبوعة من العناصر الهندسية واللونية فى الفن المصري القديم. ١٥٢.

سامى عبدالحليم. (١٩٩٠). المنسوجات الأثرية القبطية والإسلامية. اسكندرية: مؤسسة شباب الجامعة للطباعة والنشر.

صبرى سنجر .(2016) .تأثير خلط وتشييف خيوط الوبرة على القيم الجمالية والكنابات فى تصميم المعلقات بأسلوب السجاد الميكانيكى المتقابل .جامعة حلوان: كلية الفنون التطبيقية.

طارق سعيد صالح .(1995) .الأصالة والابتكار فى تصميم نسجيات مرسمة من التراث المصرى وتنفيذها بالأسلوب الميكانيكى .كلية الفنون التطبيقية جامعة حلوان.

عادل أبوخزيم .(2019) .دمج أسلوب الجاكارد مع التطريز لاستحداث تصميمات مبتكرة لأقمشة المفروشات .مجلة الجمعية العربية للحضارة والفنون الاسلامية العدد ١٥.349 .p ,

غادة محمد الصياد, و .(2019) .جماليات الصخور الرسوبية كمصدر لتصميم المعلقات النسجية المنفذة بأسلوب الجوبلان .مجلة العمارة والفنون العدد التاسع عشر.

فاتن محمد عساكر .(2004) .دراسة بعض التغيرات التكرارية على تقنيات وجماليات تصميم اقمشة المفروشات المنتجة على أنوال الدوبى .جامعة حلوان: كلية الفنون التطبيقية.

مريم زكريا ابراهيم .(2011) .أثر القيم الجمالية فى الفن الشعبى على الفن المصرى فى القرن العشرين لاستحداث تصميم أقمشة التأثيث المطبوعة .جامعة حلوان: كلية الفنون التطبيقية.

استخدام تطبيقات التكنولوجيا الرقمية للحصول على كل التأثيرات اللونية الممكنة لأقمشة الجوبلان

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المستخلص:

أقمشة الجوبلان هي واحدة من أقدم طرق النسيج المستخدمة في إنتاج المفروشات والأقمشة المعلقة. سيطرت تصميمات الجوبلان على الطابع النمطي، ولم تعد تلبي احتياجات المستهلكين، ومع تطور عالمنا الحالي كان مصحوبا أيضا بتطور كبير في مجال المنسوجات. بدأت أقمشة الجوبلان في التطور تماشيا مع التطور الذي حدث في مجال التكنولوجيا الرقمية، حيث قدم استخدام التكنولوجيا الرقمية في مجال المنسوجات مزايا كبيرة جدا لهذا المجال، وفي بحثنا نستعرض أحد تطبيقات التكنولوجيا الرقمية، وهي قريبة من تلك التي يمكن الحصول عليها من الأقمشة المطبوعة، وكذلك إنشاء تصميمات مبتكرة يتم تنفيذها بأسلوب الجوبلان وتطبيق هذه التأثيرات عليها، كما ساعد تنوع البرامج المستخدمة على تسهيل إنشاء التصميمات

باستخدام طرق التوزيع المختلفة التي تحقق العناصر المختلفة لأسس التصميم وكذلك إنشاء التراكيب النسجية المركبة و محاكاة التصميمات واختيار الأفضل قبل تنفيذها، وتوظيف التصميمات المختارة التي تم تنفيذها.

الكلمات المفتاحية:

أقمشة الجوبلان، التكنولوجيا الرقمية، تأثيرات الألوان، التصميمات المبتكرة، التراكيب النسجية.