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A Comparison Study between Natural and Synthetics Fiber Cloth to Construct Uniqueness of Hand Painting Fashion Fabric

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Abstract Images on fabric contributes significantly to the value of fashion product. The image can be a pattern or a picture. Nowadays, those images is made in various ways, by manually or by the help of technology, such as digital printing. Amid the use of sophisticated printing technology, the hand painting fabric technique remains exist and even increasingly demanded by the community. This is proven by the increasing numbers of orders experienced by the researcher who run a hand painting fabric fashion business for more than 3 years. Hand painting fabric provides unique value because of the story behind the making. Care should be taken in the making process as a work of art. Wearing a hand painting fashion is wearing an art work, beyond just wearing an ordinary cloth. However, producing a high quality and unique hand painting fashion depends on careful treatment by considering fabric characteristics, including the type of fabric fibers.There are two types of fabric fiber, synthetic and natural fiber. Both synthetic and natural fibers have different types of woven technique and lamination. Each type affects different painting technique that can be implemented. An object painted in natural fabric fiber cannot be easily replicated on synthetic fabric fiber. It will be slightly different in terms of its impression of shape, size or color. The method in this research is experimental. This study shows difference results in the painting because of the different types of fabric fiber used. This research gives recommendation on what technique can be implemented to produce desired painting, considering different character of natural and synthetic fabric fiber. The finding can strengthen the uniqueness of the painting as a crucial value for prospective consumers.

Keywords: *Hand painting fabric, natural fiber, synthetic fiber*

INTRODUCTION

Dickerson [1] states that there has been a change in consumer considerations when buying fashion products. In the 1980-1990s, consumers did not really consider the prices offered by certain brands. However, a few decades later, consumers are very concerned about prices, they demand high value products that even exceeds their purchasing power. Castelo & Cabral [2] says that consumers, especially women, will consider buying a product only if the product has a style, good fabric quality and good price. In addition, Molfino et.al [3] states that customized products have more opportunities to be highly valued.

Painted fabric is one of the fashion output that can meet the customization requirement as they are made carefully one by one. Painted fabric is in line with the slow fashion trend. The term slow fashion was first coined by Kate Fletcher [4], is a phenomenon in the world of fashion industry that offers exclusive products with customization or special attributes so that buyers are willing to pay premium prices, such as handmade product that meet sustainability requirement [5,6].

To produce a dress with painted cloth, a particular skill painter is needed where the painter must comprehend the fabric characteristics, whether it was made of synthetic or natural. We found that an object painted in natural fiber cannot easily replicated on synthetic fiber fabric. It will be slightly different in terms of its shape, size or color components, incorporating the applicable criteria that follow.

This study begins with research question as follows: How is the difference of painting on natural and synthetic fabric? How it may influence painting style?

LITERATURE REVIEW

We review the characteristics of three natural fabrics and three synthetic fabrics as follows:

A. Cotton

Cotton fabric is processed from cotton plants. Cotton fibers are usually 10-65 mm long with beige as the original color. The character of this cotton fiber is less elastic so the cotton fabric will crease easily. Cotton fabric has cellulose so it can absorb fiber well. However, cotton cloth cannot follow body shape when used. Therefore, a careful fabric construction is needed to produce clothes that fit to body using cotton fabric. Cotton absorbs color better than linen but not as quick as silk and wool. The use of mordant for color fixation will support the coloring process [7].

B. Silk

Silk is considered as the "Queen of all textile fibers" because of its beauty and elegant characteristics. Silk fabric is processed from natural protein fibers obtained from silk worm cocoons. Silk fabric absorb colors very well and had been widely used in painting [8]. The use of colors containing acid will produce brilliant shade on silk. Silk fabrics need minimum finishing touches because they have natural luster, softness and *drapability*. Silk cloth is not easily wrinkled, but it depends on the type of silk fabric, whether it is made of pure silk, spun silk or weighted silk [7]

C. Linen

Linen fabric is made of plant named *Boehmeria Nivea*. Linen, or flax, is very comfort to use because it has good air permeability, high hygroscopicity, cool and soft touch, and with low susceptibility to gather electrostatic charges on their surface [9]. this fiber protect the user from UV radiation efficiently as it contains lignin. These advantages make the flax fiber especially suitable for creating summer collections of clothes worn in warm climate [9,10].

D. Chiffon

Chiffon is considered as a term, rather than a type of fabric. It is the term to describe a light, smooth, thin and plain weave fabric. Fabrics with such characteristics can be made of silk, wool, or synthetic fibers. This chiffon fabric is woven in an open weave with tightly twisted yarn. However, in this paper we use chiffon fabric made of polymer. Chiffon fabric is made of a long-chain polymer fiber. The fiber is thermoplastic and made of elements derived from coal, air, water and petroleum. This type of fiber has a good strength. This fabric also has a good bending quality. Polyester is one of the least absorbent fibers. The low absorption characteristic makes it dry quickly. Chiffon fabric is stylish and light weighted. The fabric drapes very well and follow the body shape. Therefore, it is suitable for afternoon, cocktails and evening dresses. Chiffon characteristics give a luxurious feel. However, chiffon is prone to shrinkage or stretching [7].

E. Crepe

Crepe is also a term used to describe most of the fabrics made from plain weave. The thread is very twisted in either warp or filling direction, or both. Different effects can be achieved by turning the thread. Crepe ranges from very smooth, almost smooth surfaces to very clear crepe-textured surfaces. However, in this experiment, we use a type of crepe that is a sheer fabric similar to georgette but softer. [11]

F. Duchess-Satin

This fabric is also be known as silk-faced satin. It is very heavy stiff satin. It has a luxurious, dressy appearance. Generally, it is a blend of silk and polyester woven into a satin finish. It can, however, be seen as a hybrid of silk and rayon [12].

METHOD

Method use in this research is experimental. A representational image of a flower was selected as a painting object. The image was applied to six types of fabric using the same techniques, color, style and point of view. Six types of fabric used are three natural fiber cloths, those are cotton, linen and silk; and the other three synthetic fiber fabric: chiffon, poly-crepe and poly-duchess satin.

RESULT

Here are the results of our experiments:

A. Analysis of Painting Quality

We got some differences in terms of paint absorption process that affect the quality of edges and the detail of picture achieved.

Figure. 1. The Painting on Cotton Fabric

Paint is absorbed very quickly by cotton (Fig. 1). The paint absorption time of cotton is the fastest compared to other types of fabric in this experiment. This good absorption process results in smooth color gradation. The edge line of object formed is neat and evenly.

Figure. 2. The Painting on Linen Fabric

The absorption process of the linen fabric is good, so it is easier to create smooth color gradations (Fig. 2). The edge lines of objects can be formed neatly and evenly with the constant tone of color. There is a significant color difference when the paint is wet and dry. This is because the fiber of linen cloth is relatively big, compared to the other five types of fabric in this experiment. Pores of the linen fabric is also relatively large. It causes paint being directly absorbed to the inside part of the fabric. In consequence, it is necessary to repeat the brush painting process many times to produce sharp colors.

Figure. 3. The Painting on Silk

Paint can be absorbed very quickly in the pores of the silk fiber (Fig.3). However, because the absorption process is too quickly, it is a bit more difficult to control the flow of paint on silk than on cotton or linen fabric. Special skill is needed to paint on silk cloth using aquarelle technique, because the absorption of paint is so fast that the color that has already been applied cannot be corrected again. The fast absorption also cause difficulty in creating smooth color gradation. Even when the gradation is made, the difference color tone made of each layers is clearly visible. The edge lines of object can be formed evenly in a constant color. The painting result is shiny. It is due to thin material and glossy surface fabric.

Figure. 4. The Painting on Chiffon

Paint is absorbed slowly by the chiffon fabric (Fig. 4). This fabric has smaller pores compared to other fabric used in this experiment, therefore, it is difficult for the paint to go inside the fabric. There is small amount of stagnant liquid each time the paint is applied on fabric that caused by slow absorption. The stagnant paint causing a color gradation cannot be made smoothly, there is a clear line between different tone. The edge line of object cannot be constant and neat, it is jagged instead.

Figure. 5. The Painting on Poly-Crepe

Paint is hardly absorbed by poly-crepe fabric (Fig.5). However, the absorption process is faster compared to chiffon fabric. It is because poly-crepe has a rough surface texture. The rough surface help the paint adhere to fabric. Similar to chiffon, the slow absorption of paint on polycrepe fabric also causes stagnant paint each time the paint is applied. Therefore, the color gradation cannot be smooth, but a bit better than the color gradation on chiffon fabric. The edge line of object is jagged.

Figure. 6. The Painting on Poly-Duchess Satin

Paint is absorbed faster by poly-duchess satin fabric than by chiffon and poly-crepe (Fig. 6). It is because the polyduchess satin fabric has wider pores and thicker than the other two synthetic fabrics in this experiment. The polyduchess satin fabric is laminated by a hairy and soft texture on its surface. The paint is can be attached easily to the fabric because of the a hairy and soft texture on the fabric surface. However, the edge line of the object is jagged. The painting on this surface is shiny and has a special character because of the hairy surface technology effect applied.

B. Recommended painting style

Based on the character of the fabric above, we recommend painting styles to be created for each fabric. First, we discuss the recommended painting style for natural fabric: cotton, linen and silk; while the second is for the synthetic fabric: chiffon, poly-crepe and poly-duchess satin.

Natural or representational painting style is recommended for painting on cotton fabric, that is usually used for casual cloth. The same style is recommended for linen fabric, as both fabric has similar characteristic. However, linen has a bigger fabric pore than cotton, therefore painting on linen will have slightly different impression than on cotton. Painting with high detail can be exposed on linen, but not that much on cotton. Silk is also a type of natural fabric that absorb paint very quickly, that the painter must be skillful to be able to control the paint flow. Natural impressive style is recommended for painting on silk. It can be applied both for casual and formal dresses made of silk.

Chiffon that has low absorption characteristic cause difficulty in exposing high detail of a painting object. Therefore, it is better to avoid representational object. Decorative impressive non-representational style is recommended for painting on chiffon fabric. The fabric can be applied either for casual dress or gown for special occasion. Meanwhile, impressive naturalistic representational style is recommended to be applied on poly-crepe fabric. It is because poly-crepe had a slightly rough surface that make the paint absorption is relatively easier than that of chiffon. The last one, poly-duchess satin, is the glossiest cloth among the other synthetic fabric in this experiment. Therefore, gown or formal dress is very recommended to be applied for this fabric. The hairy and soft surface helps the paint absorption process, therefore natural impressive representational object with high detail can be achieved using this type of fabric.

CONCLUSION

Painting on fabric requires fabric characteristic recognition, especially when using aquarelle technique. Different types of fabric cause slightly different results of painting, caused by the speed of paint absorption of each fabric is different. It happened because the difference of pore size, thickness of fibers, type of fiber and type of lamination of each fabric. Our experiment to three natural fiber fabrics shows that paint was absorbed quickly, so that a high level of detail can be obtained. Therefore, naturalistic representational painting style is recommended to these fabrics. However, because of the fast paint absorption, the paint that has already been applied cannot be corrected again.

On the other hand, the challenge of painting on synthetic fiber fabrics using aquarelle technique lies in controlling the moisture content of the brush. The paint absorption of synthetic fabric is very slow. It causes stagnant water on fabric that make it difficult to create high-detail images such as that on linen. The good thing is, it is possible to make corrections by absorbing the stagnant water using cotton or tissue. Therefore, the decorative impressive nonrepresentational style is recommended to be applied to these three synthetic fabrics.

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