

Research on Secondary Design of Waste Fabric

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Abstract:

In the era of rapid development, the blind production of enterprises causes serious overcapacity in the garment industry, and more and more discarded fabrics are discarded, which not only causes large inventory, but also leads to environmental pollution, ecological environment destruction, causing serious waste of our limited resources. However, if such discarded fabrics can be reused through secondary design, the purpose of waste recycling can be achieved. In this paper, the secondary design of waste fabric is studied to fully reflect its beauty and reproduce its value. This kind of waste fabrics are collected and sorted out, recreated and designed by means of technology, and at the same time, the popular elements are integrated into it, so that it can regain the popularity of the public.

Keywords: *Garment waste fabric, Secondary design, Recycling.*

I. INTRODUCTION

Along with the development of The Times, people's dress no matter from clothing style and comfort have further ascension, costume update speed increasing, the clothing manufacturer has a large inventory, thus clothing of excess capacity problems, every year there are a lot of old clothes that cannot be properly handled.

According to the report of China Waste Disposal Committee, waste textiles processing and recycling has developed into an important emerging industry, and the number of enterprises recycling waste materials is also increasing. At present, little is known about the recycling of waste textile fabrics. According to statistics, the waste fabric of China's textiles and clothing is as high as 1×10 per year, and the situation is becoming more and more serious. Due to the low recycling rate of waste fabrics at the present stage, the recycling of waste textile and clothing seems to be particularly inadequate. Therefore, the recycling of textile waste is an urgent issue to be paid attention to in the course of sustainable development^[1]. According to a 2008 study by the BIR institute at a Swedish university, recycling just 1 kg of waste can reduce emissions by 3.6 kg, save 6,000 liters of water, reduce the use of fertilizers by 0.3 kg and reduce the use of pesticides by 0.2 kg. For this reason, the garment industry alone can significantly reduce waste emissions by recycling waste clothes on a large scale, compared with reproducing clothes^[2]. If through the secondary design of waste fabrics, waste resources are utilized to the maximum extent, and it is integrated into popular elements to give new vitality, so that it can re-enter the sight of the public. At the same time, we can reuse resources, gain the favor of the market, and effectively implement the path of sustainable development.

II. DEVELOPMENT TREND OF SECONDARY DESIGN OF WASTE FABRICS

The design and techniques of waste fabrics are indispensable in fashion design. Different fabrics present different styles, and different designs also determine the effect and function of clothing. Therefore, in the rapidly developing garment industry, it is particularly important to skillfully and appropriately use waste fabrics and techniques. The following paper will analyze the development trend of the secondary design of waste fabrics from two aspects.

2.1 From Single Fabric to a Variety of Fabric Stitching

In today's clothing market, a single garment fabric can no longer meet the pursuit of fashion in Chinese society, but using a variety of fabric mixing and stitching techniques can make a garment show different charm and style, showing different materials, colors, patterns and expression techniques. This can impact a strong and novel visual effect, by the majority of fashion people love it. This is also a new way to achieve innovative clothing design effects.

In the clothing of different functional fabrics, such as work clothes, sportswear and professional wear, different needs of various functional garments can be flexibly met by redesigning discarded fabrics. For example, under the specific requirements of casual wear, it is necessary to bring people relaxed and fashionable demands in life. Some woven fabrics can be strengthened by using a large number of integration methods, and the beauty can be gradually introduced (see Figure 1). Yoga suits, mountaineering suits and other clothes with specific needs are spliced with a variety of fabrics to meet the stretch and flexibility of human leg movements.

At the same time, in order to make the product have a richer decorative level, the stitching of a variety of waste fabrics can break through the traditional design and production techniques. This not only brings a strong visual impact, but also achieves the design effect of turning waste into treasure (see Figure 2).



Fig 1: Mixing and stitching of waste fabrics

Fig 2: Stitching of waste

(Photo credit: <http://www.baidu.com>)

2.2 Developed From a Single Design Technique to a Variety of Techniques of Secondary Design Techniques

The techniques of garment fabric engineering have expanded from traditional edge rolling, embroidery and stitching to modern overlapping, winding, stacking, drilling, laser, hollowing and other processing methods^[3]. In order to make the clothing more hierarchical and rich, you can use a variety of techniques for secondary design, so that the clothing has changeable randomness, and show the messy beauty. For example, some woven fabrics are overlapped and wound to create an interwoven garment effect and rich texture fabric (see Figure 3).

Among many traditional techniques, weaving techniques are very classical in China. If it is effectively applied to the secondary design of clothing, the overall quality of clothing material will be greatly improved. Figure 4 shows a good effect of winding hollow out on knitted fabric, thus producing a unique visual effect. If the traditional handicraft is combined with the new industrial technology, it will be a special presentation which will link the past and the future technology, and will create a new visual blend of handicraft and 3D printing, as shown in Figure 5. The iconic wavy lines, perspective and laser-cut holes perfectly show the charm of combining 3D printing with fashion. Therefore, whether the design of fabric or the use of techniques will directly affect the overall effect and style of clothing. The secondary design of waste fabrics can give new life to clothing, flexibly use the secondary design of waste fabrics for clothing innovation, and China's garment industry will walk out of a solid and sustainable development path in the future.



Fig 3: Overlapping winding Fig 4: Hollow weaving Fig 5: Laser hollow
(Photo credit: <http://www.baidu.com>)

III SECONDARY DESIGN METHOD OF WASTE FABRIC

3.1 Additive Treatment of Waste Fabrics

Additive processing is the addition of two or more elements to the original fabric, thus forming a completely new fabric style. In the design of clothing, the use of a variety of additive processing can better highlight the external sense of strength and internal sense of weight, it can enrich the fabric texture, bring people a strong visual impact, improve the artistic appeal of the fabric.

On the basis of disposable fabric, various materials are added effectively, and the fabric is reconstructed by flexible and ingenious addition, so that the overall visual effect of clothing is stronger and stronger. For example, a three-dimensional doll made of discarded fabric or other more decorative and iconic patterns can be sewn on the front of the garment, so that the design can be fully represented in the clothing. The addition of these embellishments can also sublimate the overall clothing, reflecting the sense of power and fashion of clothing, and also enhance the artistic value of clothing to a large extent. For example, the 3D jewelry of Chrisdien Deny women's spring/summer 2014 adopts a large number of three-dimensional embroidery, sequins and other "3D jewelry" additive processing, which not only improves the visual effect of clothing, but also improves the garment technology (see Figures 6 and 7).

3.2 Subtraction Treatment of Waste Fabrics

Subtraction treatment is to effectively remove some elements from the original fabric, so that the main content of the fabric is retained, which can make the whole fabric more concise and distinct^[4]. For example, on the surface of the fabric, the use of digging flowers, cutting flowers, hollowing out and other methods to destroy the integrity of the material, to cut the skin, hair, paper, plastic, etc., to form a destruction with regular characteristics, but also can use hand tearing method to create a random texture effect. For the physical properties of the fabric, chemical corrosion can be used to make the fabric appear pilling, discoloration, fleece and other effects. At the same time, you can also use washing, hair grinding and other skills to highlight the worn fabric style. This is very popular in today's market and is favored by the clothing market. The use of subtraction design can show the incomplete beauty of clothing design (see Figures 8 and 9).



Fig 6: 3D jewelry



Fig 7: Three-dimensional



Fig 8: Flower digging Fig 9: Hollow out Embroidery

(Photo credit: Cress Denny Women's Spring/Summer 2014 and Chrisdien Deny Spring/Summer 2020)

3.3 Deformation Treatment of Waste Fabrics

The so-called deformation treatment is to use extrusion, pressing, twisting and other processing design methods to make a piece of discarded fabric into a very natural fold, such as wave fold, wrinkle fold, etc. Fabric deformation design is mainly to change the morphological characteristics of the fabric through the deformation of external forces, and generally does not increase or decrease the yarn or decoration of the fabric^[5]. pleats are elements that use thermal setting to make permanent pleats of polyester garments. In the PLEATS series, Angle' famous paintings are printed on the skirt "PLEATS". The skirt is set at high temperature according to the stitch, and the stitch is removed after the stitch is set, resulting in elastic pleating effect^[6] (Figure 10). In modern fashion design, traditional fabrics such as cotton, hemp, silk, wool and so on have been processed by second addition, subtraction, deformation, and comprehensive treatment, and the creation and design of clothing is likely to become the trend of the fashion industry. The secondary design of waste fabrics and the addition of technological techniques make the visual impact of clothing stronger, improve the grade and value of clothing, and also bring fresh design concepts to the clothing industry.



Fig 10: Issey Miyake pleated series clothes

(Photo credit: <http://www.baidu.com>)

IV. PRACTICAL APPLICATION OF SECONDARY DESIGN OF WASTE FABRICS

The secondary design of clothing fabric enriches the artistic effect of clothing, enhances the visual freshness of clothing, and provides a broader design space for designers^[7].

Fabric is the carrier of clothing design. In today's fashion industry, many designers successfully use secondary design to create. For example, in Lebanese clothing brand Elie Saab's autumn/winter 2015 couture collection, exquisite craftsmanship and tailoring make the clothes very slim, and the secondary design of sequins and fabrics of its Dream Star collection, which combines romance and sexiness, shows a noble and gorgeous style.

According to the characteristics of the fabric and the use of appropriate technology for the secondary design of waste fabric is a crucial part of the production of a garment. Denim fabrics, for example, smooth texture, texture clear, cotton content is higher, it can be using a variety of design methods, will waste dismantling of cowboy clothes on restructuring, using the elements together, reel off raw silk from cocoons, burning, hollow out design technique for a second, let the original fabrics lose its integrity, broke the square shape effect, in order to highlight the clothing characteristics and personality. At the same time, denim fabric can also be used to make use of the strong wear-resisting, easy to fade characteristics, bleach on denim fabric, let it fade, and create a new design.

If the discarded denim fabric is artificially pleated and decorated from shoulder to hand through three-dimensional design process, the whole shape will take on a new look, presenting a good sense of stereo and layering, and also giving it a new artistic aesthetic and visual effect. In this way, a large amount of waste of clothing and textile materials is reduced, and new approaches and methods are innovated to achieve sustainable fashion (see Figures 11 and 12).



Fig 11: Pleated jeans



Fig 12: Stitching jeans

(Photo credit: ZuoRen Art Union)

In the process of designing clothing and making clothing, we should also flexibly use various materials to reflect the perfect effect of clothing. In 2017, the Italian clothing brand Valentino (Valentino) in the

spring and summer series of advanced couture clothing, elegant ethereal yarn, lively flouncing, nail bead, sequins and other adornment gimmick on fabrics apply, increased the effect of the performance of the fabric, in the set off of laminated fabric texture, elegant and not hard, exposed charm is not attached to who have mercy, its spirit is also reflected in the minutiae of the whole series. It is led by advanced manual skills, and the secondary design of the fabric perfectly illustrates the designer's ideas (See Figure 13).



Fig 13: Secondary design
(Photo credit: Valentino2017 Spring/summer)

In today's society, the surge of "fast fashion" has created more and more fashion garbage for us. Subjected to the unwritten rule that they should not wear too many clothes for each exposure, stars in the entertainment industry frequently buy clothes and leave them unused. At the Spring Festival gala in the Year of the Snake, Tan Jing presented a simple and down-to-earth look, which her stylist said was the result of renovating an old object. Tan Jing had already worn this dress in her 2011 concert in Guangzhou. This time, this dress only has a distinctive design in the waist and neckline (see Figure 14). Only such details of the transformation, so that the dress took on a new look, with a new attitude back to the public's view.

The repeated use of fabrics can not only save our resources, but also enable us to expand new ideas of clothing design, design more practical clothing in line with the development of The Times and the public aesthetic, and create a sustainable development path for Chinese clothing.



Fig 14: Tan Jing's old clothes for the Spring Festival Gala

(Photo credit: <http://www.baidu.com>)

V. CONCLUSION

The biggest characteristic of the clothing industry lies in its fashion and pioneering nature. It is a forerunner standing on the top of the tide and the newest and fastest industry transforming art, technology and imagination into material products. The second design of clothing fabric is undoubtedly the way to promote the advancement of this industry. Therefore, we should strengthen the publicity and practice of promoting the secondary design of waste fabrics, so that the importance of secondary design of waste clothing can be known by more people who love fashion. The redesign of waste fabrics is of great value both in terms of environmental protection and economy, and can also improve the artistic value of fabrics to a great extent, enhance the individuality of fabric styles, and thus extend the life cycle of clothing products.

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