

Overstitching as an Approach to Thread Art and Fashion

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Abstract

Fashion generates codes for interpreting individual identity. Among fashion designers, identity is mainly developed in two different contexts: commercial and artistic. Commercial fashion designers are particularly focused on developing designs using fabric and style lines, whereas fashion designers whose primary goal is innovation are keen on developing designs by means of a peculiar manner of presentation or a new conception of fabric. This study documents a personal experimentation with new concepts for fabric construction. Acknowledging that fabric is a crucial element for fashion, this researcher set about investigating the potential use of sewing thread for creating fabric. The aims of this research are 1) to analyze possible techniques for generating unique forms of fabric and 2) to create new fabrics useful both for fashion and decorative art. The study demonstrates the possibility of approaching artistic fashion by manipulating overstitching. This study provides a new dimension whereby fabric can be generated from overstitched threads using a variety of techniques; non-woven, patterned non-woven, interweaving, knitting, and embroidering.

Keywords: Overstitch, Textile, Fashion, Art

1. Introduction

Fashion can be divided into two major types, namely functional (commercial) and artistic fashion. Although there is much gray area between the two, design of the first type corresponds more to practical needs and market forces, whereas the second type refers to a more idiosyncratic or conceptual approach to design and presentation. This basic difference in intent generates varied methods for approaching fashion design, but the fundamental elements of fashion consist of material, color coordination and form or style. These factors interact in a complex manner, influenced both subtly and blatantly by social factors, but style is generally understood as one of the most important factors for attracting customers [1-2]. Nevertheless, material remains a crucial preliminary consideration when developing new fashion designs [3].

Creative thinking is a term used widely in the related design fields, but its origin and development remain ambiguous [4], even though Michael Schrage, co-director of the Massachusetts Institute of Technology (M.I.T.)'s Media Lab, points out that *"Innovation is not just about the introduction of a new idea -- it is about how ideas diffuse."* To be more precise, *"Actually, it's not just how ideas diffuse. It's how the behaviors and perceptions and perspectives associated with those ideas diffuse"* [5]. Because of such complex relationships, commercial fashion design has in some regards constrained the development of 'innovation' itself [6].

Non-woven, woven and knitted fabrics are the basic, traditional types of fabric construction [7], and thread arts mainly refers to quilts or embroidery, which often appear to belong more to the domain of textile art than fashion. Acknowledging that fabric is an essential element of fashion design, this researcher set about investigating potential new methods for constructing fabric that might generate a unique approach to fashion, using overstitched threads generated with an overlocker as raw materials for constructing pieces of fabric. The aims of this

research are to analyze the potential for developing novel methods of generating material and to create new fabrics useful for both fashion and decorative art.

Experiments were designed using four different fabric construction techniques that manipulate overstitched threads to achieve a variety of textures. These techniques include non-woven, interweaving, knitting, and embroidering (see section 3.3).

2. Investigating the Potential Uses of Sewing Thread

Basic Types of Sewing Thread and Uses for Overlockers

Sewing techniques are mainly divided into 'hand' and 'machine' sewing. Each involves various kinds of skills, sewing machines and solutions. Different types of sewing machines are used according to different fabric engineering needs, for instance, stitching two pattern pieces together, trimming a garment pattern edge, opening buttonholes or embroidering. The sewing machine used to trim the edges of garment patterns is commonly known as an overlocker or overlocking machine.

An overlocker requires thread for its manufacturing process. Thread basically includes three types of fibers: natural, synthetic and animal. Each type of fiber is selected in accordance with the need to produce a specific type of seam. Threads used for trimming garment pattern edges are mostly synthetic fibers, such as polyester (also known as SP thread), rayon and nylon. Natural fibers such as cotton or silk may be used according to individual need. Blended threads afford yet another possibility. This study employed fine metallic threads to create a rich effect on the fabric's surface.

Thread and yarn are fundamentally similar, with yarn having greater variation in size. 'Denier' and 'Tex' are the two most widely used yarn count systems. A 'denier' is equal to the weight of 9000 m of yarn measured in grams. Silk and man-made fibers are usually measured using the 'denier' system. The 'Tex' system determines yarn count according to the weight in grams of 1000 m of yarn [8]. However, the overstitched thread used for this

study (which may also be regarded as ‘yarn’) is difficult to measure precisely because it is not a traditional type of yarn construction.

Basic Types and Uses of Overstitching

There are several basic types of overlockers that generate different kinds of stitches. Those most commonly used in the clothing industry are the three-or-four-thread, the true four-thread, and the five-thread overlockers.

The three-or-four-thread overlocker produces a three-thread overlock with a fourth thread running down the middle, a technique sometimes also called a ‘mock safety stitch’. A variation is also possible by laying the fourth stitch alongside the three-thread overlock. This machine is often used to produce a three-thread stitch alone, a type of stitch that is more secure for sewing loose, woven knits. The true four-thread overlocker produces a stitch that is well suited to woven fabrics by combining a two-thread chain stitch with a separate two-thread over edge to create a secure seam for sewing. The two-thread chain can also be used alone to make seams with sweater knits. The five-thread overlocker produces a stitch that combines the two-thread chain stitch and the three-thread overlock to create a secure seam for sewing. Alternatively, it can also sew the two-thread chain and the three-thread overlock separately.

Using the same kind of thread for the basic types of overstitches described above, the fewer threads used, the softer the resulting material generally feels to the touch. In addition, the three-or-four-thread overlocker is most widely used in the trimming business. This study mainly used a three-thread overlocker for creating overstitches.

3. Experiments and Analysis

Experiments were conducted to create new methods of fabric construction. Three different types of threads—cotton, SP thread and nylon—were selected for use with a three-thread overlocker to create fabric from overstitched threads. Three different elements, namely overstitches, color, and texture, were used to examine the possibilities for developing a new method of fabric construction.

Manipulating Overstitches

In the garment manufacturing process, ‘tension adjustment’ refers to controlling the balance of the feeding threads. Similarly, when using an overlocker, tension adjustment is key to producing perfect overstitches for a garment. In the experiments, the three-thread overstitching process was set at differing tension levels, continuously shifting each other’s tension from time to time. This means that there are three wheels to be controlled while overstitching. The overstitches produced clearly show different levels of looseness and tightness. In order to create a richer effect from the overstitching, tighter tension was used more frequently for this study. Nevertheless, tension adjustment alternated among the three wheels.

Doing so imparted to each overstitched thread an appearance similar to that of a greater volume fancy yarn, yet more textured and sophisticated. The most outstanding feature produced was the scalloped or petal-like shape of overstitched thread when tension was controlled in such a way as to effect an extremely unbalanced relationship between tightness and looseness.

Color Manipulation

Color is primarily a sensation: it is subjective and depends very much on the person perceiving it and the conditions under which it is perceived. With respect to the arts, color is part of the

sensual experience and realistic representation of a form. In the fashion business, color also works in close association with the theme and the style of each seasonal collection.

It is generally understood that a three-thread overlocker requires three threads of the same color unless special effects are specified. Sometimes it is also possible to use three threads of different colors within a single color shade. Special cases may occur because design requirements often vary from one project to another.

In this research, two to three different colors were used for the three threads. The three basic color qualities, namely hue, tone and saturation, were applied to selecting thread colors. The researcher experimented with both harmony and contrast to examine the visual effects they produced [9]. Although various methods of color coordination were employed, in order to limit the peculiar qualities of the fabric, this study mainly used different shades of the same colors to create an effect of greater harmony for the final designs.

Manipulating Texture

Starting with the overstitched threads manipulated in the previous stage, the researcher referred to the three traditional methods of fabric construction to develop four ways of constructing fabric capable of creating new texture effects. These methods are non-woven, interweaving, knitting and embroidering techniques.

Non-woven Technique

The non-woven technique developed into two types, namely ‘free’ and ‘patterned’ non-woven techniques. Free non-woven fabric is created by spreading and assembling overstitched threads into a square or rectangular fabric shape. Two sheets of thin A0 size paper were used in the manufacturing process to assist with assembly. Prior to spreading the overstitched threads between the two sheets of paper, some quadrilateral meshes (approximately 2.5cm x 2.5cm) were marked on the paper as a sewing guide. The overstitched threads missing from the mesh lines were then briefly hand-sewn between the two sheets of paper. Finally, a regular sewing machine was used to assemble them together along the mesh markings. In order to tear off excess paper more easily after stitched threads were assembled together, the distance between each stitch must be reduced to a small size.

Patterned non-woven fabric is created in a similar way, but is assembled into an identified garment pattern shape instead of a square or rectangular piece of fabric (Fig 1). This means the garment design has been determined before the fabric is produced. Free non-woven fabric can be used to produce a shawl or stole and it is also possible to cut it into garment pattern pieces. However, it is crucial to make sure that all the edges are under control before cutting. For this purpose, a fine piece of voile was stitched onto the edges of the patterns before they were actually cut out.



Fig 1. Fabric constructed using non-woven technique

Interweaving Technique

The general weaving technique consists of 'hand' or 'machine' intertwining of warp and weft yarns into a targeted fabric construction. Different features of woven fabric correspond to different yarn constructions.

The interweaving technique used for this study was done entirely by hand. The overstitched threads were intertwined with a meshed material commonly used as decoration in flower arrangements. The width of the meshed material was limited to 20–22 cm. In order to expand its width, four narrow bands of meshed material were linked together, mesh by mesh, using a single sewing thread with a long dangling string. Finally, the overstitched threads were intertwined diagonally with the meshed material.

The color of the meshed material is blue; in order to create significant contrast in this piece of fabric, red, orange and yellow threads were mixed in the overstitching so that the resulting piece of fabric consists mainly of intertwined blue and red tones. The effect is one of understated elegance (Fig 2). Some of the overstitched threads were randomly and lightly pulled from the mesh holes and left dangling free at the four edges of the fabric. Doing this imparted an ethnic, structured quality to the fabric.



Fig 2. Fabric constructed using interweaving technique

Knitting Technique

Knitting is another traditional way of constructing a piece of fabric consisting of two basic types; 'hand' and 'machine' knitting. For this experiment, the overstitched threads created for this study were used as yarn for hand-knitting. A pair of 10mm knitting needles was employed to knit a jumper with a high neck and long sleeves. In order to strengthen the construction, overstitched thread was knitted together with a single strand of woolen yarn. By doing this, the overstitched threads themselves actually took on the appearance of fancy yarn. Ten balls of woolen knitting yarn were used to complete a jumper for this trial. The structure and construction of the jumper were designed to be plain and understated, in contrast to the fancy look of the overstitched threads.

Different shades of yellow, lime and gold were used for this jumper (Fig 3). The weight and thickness of the fabric produced from overstitched threads increased dramatically after knitting it together with woolen yarn.



Fig 3. A knitted jumper using overstitched thread and woolen yarn

Embroidering Technique

Embroidery is a handicraft for decorating fabric or other materials, stitching designs with a needle from strands of thread or yarn. Materials such as metallic strips, beads, quills and sequins may be incorporated in embroidery. Embroidery can be done either by hand or machine.

In this study, embroidering was applied to the free non-woven fabric produced in an earlier stage (section 3.3.1). In order to impose a different texture on the fabric's surface, sheer fabrics such as chiffon and organza were cut into pieces and used to embellish the fabric. The colors used to ornament the surface are basically of similar shades and proportions of brightness so that the total look of the fabric remains consistent and well-integrated (Fig 4).



Fig 4. Surface design using embroidering technique

Manipulating Style

Bradbury's theory of product innovation divides product innovation into four phases, namely, feasibility, application, development and design, and exploitation [10]. In this study, style manipulation was aimed at developing feasible forms that would take advantage of the natural characteristics of the fabric. Therefore, the design goal was to explore the potential uses of the newly manipulated fabric rather than to produce severe or outrageous shapes. The fundamental requirement was the ability to conform to a female body.

The two pieces of fabric used for this experiment were the free non-woven fabric (Fig 1) and the inter-woven fabric (Fig 3). Results show that both pieces of fabric are more flexible for style manipulation compared to the patterned non-woven fabric (Fig 2) because the latter has already been trimmed to the shape of a particular garment pattern piece making it difficult to re-design, whereas the square or rectangular shape is more unpredictable, providing greater opportunity for style manipulation. However, the experiment also revealed that the free non-woven fabric takes more time to trim to a fit style. Consequently, both types are valuable if the end use of the design is set in advance.

4. Conclusions (Summary and Prospective)

This approach opens up a whole new territory for designers to explore. The concept is elegantly simple, but the end result is simply elegant. Stitches can go in any direction because of the random use of thread color and texture in producing the cloth. This study introduces an innovative approach to producing pieces of fabric from overstitched threads. Fabric construction techniques are not limited to one single solution only, such as woven, non-woven, knitting or embroidery used for traditional stitchery, but instead, two or more different methods for

constructing cloth may be incorporated together to generate a richly textured fabric. This study has demonstrated the possibility of an artistic approach to fashion that manipulates overstitched threads using non-woven, patterned non-woven, interweaving, knitting, and embroidering techniques.

Some limitations became apparent during the experimental process, however. For instance, owing to the tedious nature and long time required to produce fabric from overstitching, the approach is insufficiently persuasive as a solution to generating fabric or for hand-knitting a garment. In addition, although this research was more concerned with an artistic approach to fashion, fabrics created from overstitched threads must be tested for strength, stretchability and washing, so their suitability for end uses such as garments can be more convincing.

Suggestions for future research are as follows. First, the fabric pieces resulting from these experiments are mainly hand-made, but it is possible to create similar work using machines, particularly by knitting. Secondly, the jumper created from overstitched material can be knitted using only one or two overstitched threads for more versatile application to design. Finally, the application of overstitching in this study provides an example of how to explore design by extending a technique beyond its common use. This approach also suggests the possibility of recycling abandoned, waste or un-necessary materials from the surroundings for use.

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