

## COMPOSITE OF MULTICOLOURED YARNS IN KNITTING DESIGN

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**ABSTRACT:** *The aim of this study is to research interdependence between a creative idea and technical features in the process of designing knitting material. As technical support in the form of mechanical devices gives many possibilities for creative expression in fashion design. But still in search of aspiration for originality it needs to be upgraded further by the designer's solutions in a sense to materialize unique ideas. So the focus of interest in this research project will be in the range of using techniques to create knitted textile materials inspired by the colours and forms from nature and how the need for further creative expression improves technological solutions. In this case the result is a knitted material in the finest colour shades made by composite of yarns.*

### 1. INTRODUCTION

It is noticeable that in the variety of textures of all kinds of textile materials, knitted ones have most rich expression in texture because of the possibility of using very thin and also very thick yarns. Using a different thickness of yarn results in different stitch sizes which in combination with different knitting techniques such as for tuck stitch patterns, Fair Isle, pintucks, intarsia techniques etc produces wide range of textures. „When looking at fabric construction it is important to consider what properties a certain technique will give to a fabric and ultimately the finished garment[1].“ In that sense the research team studied the process of knitwear design from the starting idea through the working process to the final product. The approach to making colour shaded knitted material in standard way is using hand dyed yarns or dyeing already finished knitted product [2]. So in research specifically focussed on the idea of is it possible to improve a final garment product in an aesthetic sense using other technological methods than usual in the manner of multicoloured knitting [3]. Although this kind of coloring process can produce color graduated yarns, the material knitted with dyed, crafted yarns doesn't result in enough finesse suitable for wide range of knitting techniques which can vary from lace to thick knitting patterns. Also researching ways in which the original designer's idea can be implemented and realised within both the

constraints and advantages of using a specific knitting machine which has a high medium of technical abilities.

## 2. RESEARCH METHODS

The knitting machine used in our research project is a Passap brand knitting machine with 2-beds, electronic console and 4 colour changer, Figure 1 [4]. The Computer operates in a way that user can choose memorized stitch patterns and in order of programmed question lines, visible on the display which demands yes or no answers, it can create its own best suited specific program. There are large number of patterns almost 700 which can be combined and modified to make a new one and that option gives a wide range of creative possibilities[5]. According to the type of stitch pattern the computer displays which needles and pushers must be manually put on cast as preparation for knitting and if it requires a single or 2-bed. After that process of programming the beds receiving electric impulses from computer and arrange needles and pushers in a way that stitch pattern can be made.

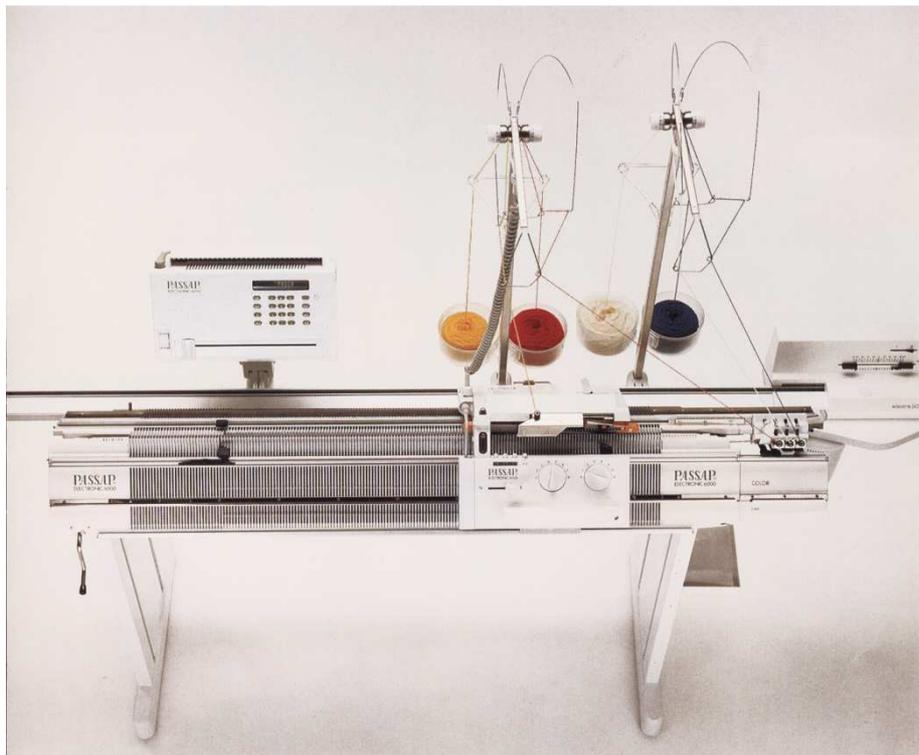


Figure 1: Passap brand knitting machine [8]

The design idea is inspired by the shades in nature and to create knitted material with shades with the finest most graduation that can be produced in that way. The technical specification of yarns are three types, Industrial, 2 ply medium and 3 ply sports, that can be used with this knitting machine. Regarding this, the first step in realisation was to produce tests with all of the stated types of yarn and in accordance with the idea in a wide colour range, Figure 2. Comparing them to the large amount of knitted material researched within internet communities the results were very similar [6]. In a technological sense the knitted tests were successful but in an aesthetic sense the value did not match up to the designer's idea. Even though the chosen yarns was slightly different in same colour shade, knitted alone, one by one it produced visible separated areas which makes the visual effect of the apperance of stripes rather than shades. So using dyed yarns no matter how close to each other in colour spectrum, it shows on the knitted material a clear disparity. Almost as if it is completely different colours. As the aim was to produce an effect of shades, the next step in process was to workout the problem of how visually solid and compact knit material can be made in a manner without strict border lines between different colours. In the medium of painted art, a variety of colours are produced by mixing basic colours and from this came idea to use that technique in its own specific way to create something similar in knitted material.



Figure 2: catalogue of sample sewing threads used in the research project

### 3. RESULTS

In accordance with that idea and the technical abilities of knitting machine, thicker yarns were not adequate to use but thinner industrial yarn were more suitable because it can be used alone but also works well with another one industrial yarn in which case if it is in a

different colour can produce interesting dichromatic effect. Although the knitted test with two different colour yarns combined as one gave a more satisfying result from aesthetic aspect, it still wasn't take the form of original idea. To make it as fine as possible the designer's next try was to go in the direction of using yarn thinner than it is actually recommended for that type of knitting machine and in that case sewing threads seems suitable. So instead of one industrial yarn, two sewing threads were put together which made a composite. This was adequate for knitting and that the knitted test presented best result matching both criteria; technological and aesthetic Figure 3.



Figure 3: jacket knitted with the composition of one industrial yarn and two sewing threads [9]

That combination of three components, one industrial yarn and two sewing threads proved itself as a satisfactory technical method, because thicker industrial yarn gives to material a rich fullness, and in an aesthetic way with two sewing threads a shading effect was accomplished. Going further with researching naturally by itself leads to the idea to replace

that kind of composition of industrial yarn with another two sewing threads in which results in a combination of four sewing threads a softer than the prior method and because of that is more suitable for knitting thicker lace like patterns.

Additionally the composition of four yarns gives much more options in changing shades of colour and can produce almost invisible transitivity among shades of same colour and even between different colours Figure 3.

The research project also showed interdependency between technical fields and the creative work process in fashion design which in this case inspirational inputs were going in both directions and made the result out of estimated possibilities. As many of the technical features of knitting machines gives the designer templates and the opportunity to create in better ways also the creative idea can surpass manufacturer's vision and go beyond predicted technical characteristics Figure 4.



Figure 4: tunic knitted with the composite of four sewing threads [10]



Figure 5: dress knitted with the composition of one industrial yarn and two sewing threads [11]

#### 4. CONCLUSIONS

The research of new solutions for finding how to improve knitting design in an aesthetic way showed that these kinds of processes increase technological performance. But also as fashion designer Brooke Roberts said: "How is knitwear evolving? Mostly through technology and increased sophistication of programming techniques" [7]. This kind of analytical project can be observed in engineering science and applied to develop technical support. In this research it was shown that other kinds of yards can be applied; in this case sewing threads instead of yarns, which can give improved results and the data for new research into applications of nanotechnology in textiles.

#### 5. REFERENCES

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#### IMAGE SOURCE

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- [9] photo by: Helena Schultheis Edgeler, fashion designer: Biserka Šipek, 2016.
- [10] photo by: Helena Schultheis Edgeler, fashion designer: Biserka Šipek, 2002.
- [11] photo by: ©hrt, fashion designer: Biserka Šipek, 2016.