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DIGITAL PRINTING: RELATIONS BETWEEN TECHNOLOGY, **DRAWING AND TEXTILE**

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1 INTRODUCTION

The result of image reproduction in textile printing is often influenced by instruments and techniques used in its production process. In current processes, textile digital printing stands out for its ability to reproduce images. For Neira (2012, p. 62), "In a way, this gave us the illusion that 'anything is possible' in relation to creation for textile printing...".

The textile digital printing technology has reduced production stages, resulting in a new workflow that saves time, space, and natural resources. As the market goes digital, new products and business models are created. According to Ferreira (2015, p. 12), "Contrary to what is commercially disclosed, textile digital printing is not a simple activity nor is it exempt, for an instance, from a complex learning curve." The designer has a key role in this scenario, as they clarify and interconnect the stages of design, creation, and production so that resources are better used and the process is optimized.

Knowing the textile substrate is essential to develop products. All processes, including textile printing processes, are determined according to the type of fiber to be used and the desired final product. The color variation from the different electronic devices used and the different chemical reactions from the combination of fabric and ink may change the results. Changes resulting from the composition, structure and color of the fabric are more difficult to be noticed (SOUZA, 2016).

The purpose of this article is to analyze the result of applying different types of images (photographic or drawn) on textile substrates with different compositions and structures using digital printing technology. It also aims to understand the transformations that my occur in the image from its digital matrix and to observe whether the final result of the image reproduction has significant differences. For this purpose, a bibliographical survey was carried out on the technical factors related to the digital printing process on textiles that could influence the result of the reproduction of images. To complement the study, printing tests were also carried out to clarify and help to understand this process.

2 DEVELOPMENT

During the bibliographic research, due to the lack of information about the transformations of the images, some experiments were carried out to generate material for this analysis. There was a need for practical examples based on the flows proposed by this new technology. Thus, different images were printed on different textile substrates.

The images were selected so that there were different technical characteristics and technical characteristics common to the print designs. The print files had three copies of the images in full size in the following resolutions: 300 PPI 150 PPI and PPI 72, therefore, it was also possible to analyze this characteristic.

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Textile printing bureaux that produce small quantities of prints were used for the tests, and the smallest purchase quantity was 1 linear meter. It was also mandatory that the textile substrates had different compositions and were supplied by the textile printing bureau itself. The following fabrics were selected: tricoline (100%) cotton); canvas (100% cotton); satin (100% polyester); oxford (100% polyester); jersey (100% polyester);

The fabrics were chosen based not only on the composition, but also on the variables of visual and physical aspects.

Taking into account the flow of the productive processes itself, the analysis of the results is based on the transformations undergone by the images. It begins with the process of converting from analogue to digital mode and proceeds with the analysis of possible influences arising from the composition and structure of textile substrates. According to Lupton and Phillips (2008, p.13): "Point, line, and plane are the building blocks of design. From these elements, designers create images, icons, textures, patterns, diagrams, animations, and typographic systems". Based on this definition, it was possible to delimit these elements to analyze the images. The ability to reproduce colors in textile digital printing is a key differential and, given its relevance, this element was also included in the analysis. The results were subdivided into: image results (resulting from the conversion process from analogue to digital mode), post-printing results (resulting from the composition and structure of fabrics), and color results (changes in hue,

saturation, and value).

As a result of converting the images to the digital mode, it was noticed that: images digitalized with high resolution preserve the details of the original images; with low resolution, these elements have undergone changes, some of which have not been reproduced (smaller dots and lines) or have lost sharpness.

Regarding the results of fabrics with equal structures and different composition, the photographic image was the one that most changed on cotton canvas, losing details and very fine lines.

In fabrics with different structures and the same composition, the satin fabric presented the clearest images. High gloss and a smooth surface are two important characteristics of satin, and it is clear how these characteristics influence the result of the image.

The difference in resolution between the 300 PPI and 72 PPI files is best seen on the smoothest fabrics. However, it is observed that the more prominent the weave of the fabric, the greater the change in the quality of the printed image, even in 300 PPI images. It is also observed that apparent weaves tend to harm the visualization of the textures of the images, especially in bright areas.

Regarding the change of the image due to the physical aspects of the fabrics, elasticity was the most relevant characteristic, especially in jersey. Changes in the images were only noticed when the jersey was pulled and stretched. In general, polyester fabrics showed intense, saturated colors, good





3 FINAL CONSIDERATIONS

The development of a print design has infinite artistic possibilities and is subject to adaptations during the development process. Developing based on this technology is not exempt from interference during the production process; on the contrary, it is still very susceptible to interference.

The communication between customer and supplier is important to obtain the correct information about the process used and to avoid unforeseen events. Different surfaces and different suppliers tend to have different results. The composition of the fabrics was the main difference among the samples received.

The designer must consider the relationship between drawing technique, image quality and result of application on fabric as more complex than printing on paper. It is difficult to get access to information about the technology used in textile printing bureaux, however basic information, such as guidelines for closing files, would not compromise the company and would help the consumer to get access to this type of service.

Suppliers and customers are recommended to give or search for clear information about the file, color profile, image resolution, characteristics of the raw material, printing area, and fabric conservation information. Based on the need, it is also recommended to use a sample or previous test so that the client knows the characteristics of the material and the quality of the print.

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