RECYCLING OF TEXTILE WASTES THROUGH TEXTILE COLLAGE

Anne ANICET¹, Pedro BESSA², Ana Cristina BROEGA³
¹Design PhD student at University of Aveiro
²PhD in Design, University of Aveiro
³PhD in Textile Engineering, University of Minho

ABSTRACT

The paper presents part of a PhD research currently underway at the University of Aveiro, whose primary focus is the reuse of waste from the textile industry through the technique of textile collage. To this end, we developed a methodology for design creation and subsequent production that was later continued in a workshop with artisans of the Bank of Clothing of Caxias do Sul, in Caxias do Sul, Brazil. The main objective of this work was to develop a methodology for creation textile accessories applied on apparel with a focus on sustainable design.

KEY-WORDS

methodology, reuse of textile waste, textile collage, sustainability

INTRODUCTION

The design of the twenty-first century alerts for issues such as aesthetic, functionality, production as well as environmental issues, taking into account the needs and desires of modern consumers. If on one way, companies want to increase their production and profits, in the other must kip in mind sustainability factors throughout the product life cycle. Ecological awareness, as well as research and sustainable alternatives are essential so that problems such as pollution and environmental degradation, commonly found today, should be banned or at least minimized to avoid compromising the quality of life in the near future.

There are many alternatives to reduce these damages and preserve the resilience of nature. One of them is the reuse of industrial waste. In textiles, for example, many companies have difficulty in giving a right destiny to the latter, the ordinary disposal of such waste being forbidden, and their failure to comply with current legislation may have serious tax consequences.

In Brazil, for example, Law No. 9.921/93 Article 8 says that the collect, transportation, treatment, processing and disposal of solid waste from commercial establishments, industries and services, are the responsibility of the companies that generated the source themselves. This provision was recently strengthened by Law No. 11.520/00 Art.218.

To solve this problem, many companies in the textile industry give their waste (weaving, knitting and clothing) to charities that use it for stuffing pillows, tapestry, blankets, and other craft and needlework. Other companies instead, pay for the collect and processing of such wastes, or decide
to consign them to the “Banks of Clothing”, which have by mission to organize and redistribute them to various registered entities. The Bank of Clothing of Caxias do Sul (Brazil), for example, has 130 entities registered, among them associations of retired people, mothers’ clubs, prisons, psychiatric facilities, and ethnic/native organizations.

Working with the creativity and development of a product, many designers apply the 3 R theory (reduce, reuse and recycle) in order to achieve a sustainable design. A first approach seeks reduction at the source, i.e. by reducing waste generated by manufacturing and consumer products as defined by the EPA / Environment Protection Agency [Straliotto09]. Reuse, in turn, is characterized by the use of already existing products, or parts of them, often with a new function or application. Finally, recycling is the recovery of raw material from products, to benefit it back into the development and production of new products. Often, recycling is considered an end-of-line alternative, less environmental-friendly than the alternatives of reduction and reuse because recycling processes involve consumption of nonrenewable energy sources [Manzinni e Vezzoli08; Chehebe02].

One can even consider that, quite often, recycling is actually a “down-cycling” as the process reduces the material’s quality over time [McDonough and Braungart02, Fuad-Luke10]. A new concept that has gained importance is “up-cycling”, which means using a material already used or the residue of a product as it is found, without expending more energy in its reuse, i.e. without recycling the product (ibid.). This concept fits the research that the author has been developing in her Design Ph.D.1, working with the recycling of waste from the “Bank of Clothing” of Caxias do Sul, in the state of Rio Grande do Sul, Brazil.

When dealing with possible innovative solutions one must seek a balance between the technical and the socio-cultural dimensions of innovation, something which Manzini and Vezzoli represent as a point somewhere in a plane defined by axes T/technological change and C/cultural change. [Manzini and Vezzoli08]

The intention of our research is, in this sense, to achieve a balance between the technological and the cultural axes working them effectively, both through the development of textile collage technology, and through training of local artisans and workers so they may have an income, the whole converging on a solution for sustainable design.

This research aims to recover clean wastes from textile companies to create new textile substrates to nourish the fashion industry - both in relation to clothing and accessories, and in the field of decoration, with the creation and development of innovative, higher added value products and social responsibility. In the alignment of this logic, research is being carried out on the expressiveness of textile manufacturing waste, together with the development of new construction technologies and / or reconstruction of non-woven fabrics following ecological concerns.

As mentioned, the technique used in this study is textile collage, because it has many advantages and great potential, e.g. being a clean, non-polluting process that does not generate byproducts, besides being a new and little explored technology. This technique is based on traditional methods of clothing manufacture, where the use of buckram (fabrics or non-woven fabrics that have thermal adhesive surface) in order to give greater rigidity to certain parts of the piece, such as

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1 Anne Anicet, Colagens têxteis: em busca de um design sustentável, Design Ph.D. research project at University of Aveiro, Portugal, under supervision of Pedro Bessa and Ana Cristina Broega.
collars, cuffs and lapels is current. It can be said that the thermal adhesives used in this research are an evolution of buckram above. [Rüthschilling and Anicet06]

**Methodology**

Initially, some wastes were collected randomly at the Bank of Clothing of Caxias do Sul to be tested regarding both to the bonding, and to the expressiveness of the raw material. Later, there were also selected some residues from the cutting process of textile manufacturing of winter coats of a 100% wool composition. These residues have responded quite well to bonding tests. Thence, the author has created some prototypes that were later used as models in a workshop held on 24 February 2011 with artisans/craftswomen linked to the Bank of Clothing of Caxias do Sul.

The selection of the artisans for this workshop was conducted by the Bank of Clothing. As it has more than 130 entities registered with about 3000 people, the selection criterion was to look for people who already had some experience with craftwork, who were interested in the workshop and had a leadership profile, so that they could replicate the process with other artisans.

In the first hour of the workshop, the project was introduced, being explained the possibilities and advantages that textile collages can provide both in terms of clothing/garments and decoration. As the workshop was not very long, one decided to develop pieces of clothing accessories, although the technique has innumerable possibilities of application.

Then, the artisans selected the wool, raw material to be used in the collages throughout the workshop. Wool had been chosen because there was an excess of this material in the clothing stock within the Bank. For the selection of colors, it was decided to use the wool’s range of colors and shapes as found in the wastes. At that stage, wastes of adhesive buckram were also collected by the craftswomen in the Bank of Clothing, and finally the thermal presses were shown and the technical process of textile collages explained.

The figure 1 shows the methodology used in the process of creation and development of the products / fashion accessories.
The pieces developed in this workshop were collars, cuffs and straps for later use in fashion garments, as can be seen in Figures 2.,

These items are still in its prototype phase, but we intend to put them soon in the production line, with the textile collage stag being made by the artisans of the Bank of Clothing of Caxias do Sul

**CONCLUSION**

This research aims to contribute to the development of new eco-friendly technologies, with a decrease in manufacturing waste and an improved innovation through new visuals as differentiation factors in products of fashion design. Although the prototypes are still in the testing phase, it is believed the research is in the right way for the development of sustainable products with high added value. The next step will be to implement the process of creating and developing products / fashion accessories in the production line so that the artisans, belonging to the most varied types of communities can have an income to help them in their livelihoods as well as their families.

**REFERENCES**


