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From waste to fashion – a fashion upcycling contest

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Abstract

Fashion industry has a huge environmental impact, with increasing consequences all around the world. It is clear that the fashion consumers and stakeholders need to evaluate present *status quo*, according principles of sustainability and circular economy. Circular economy can be a guideline for the fashion industry, promoting product development focused on sustainable products (e.g., green products and cleaner technologies) and recyclability (e.g., upcycling and reuse of fibers from disposal clothes).

Textile wastes, including clothing (retail stocks or personal used items) and fabrics (knitting, woven or non-woven industrial products) from different sources, need to loose negative image achieving new consumers' value and to become "raw materials" to close the loop.

This paper aims to present and discuss the participation of two young fashion designers in *Upcycling Project by TAP*. Challenges and contests like this, coming from several sectors and different organizations, are important and highlight the urgency to change old ideas and concepts, increasing creativity and beauty, even if the fashion industry is not ready for it yet.

Using old textiles from plane seats and metal accessories from seat belts as raw materials, the designers developed a conceptual long coat according fashion design principles and they managed to get the 3rd place among height final participants. The description of the different stages (initial drawing, materials selection, modelling, cutting, sewing and finishing) will be presented, as well as fashions' process design (ecodesign and upcycling) focused in sustainable approaches and circularity. A main outcome of this contest was the media exposure obtained by the designers, including in the television (RTP1) and several websites. A more conscious fashion consumer needs information and knowledge about these topics to demand this conscience from the fashion brands.

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1.

1. Introduction

Fashion industries (textile, clothing, accessories, home textiles and footwear) have a huge environmental impact, with increasing consequences all around the world. It is clear that fashion consumers and stakeholders need to evaluate present *status quo*, according to principles of sustainability and circular economy regarding "our common future". Circular economy can be a guideline for the fashion industry, promoting product development focused on sustainable products (e.g., green products and cleaner technologies), the designing for

disassembling and the recyclability (e.g., upcycling and reuse of fibers from disposal clothes) among other approaches [1].

For a long time, the main approach at waste's sustainability was focused in the three "R's": Reduce, Reuse; Recycle, in order to minimize damages. At the beginning of this millennium, William McDonough and Michael Braungart proposed a new "R": Re-thinking or (Re)Designing [2]. This new "R" is based on the behavioural reorganization of the society, focused on Ecodesign and design processes linked with sustainability and with a new conscious consumer aware to fashion environmental impact [3].

There are several examples of this "new conscience" by the companies in many activities and businesses. Sustainable

business models can create positive impacts and/or reduce negative impacts for the environment and society [4], being - the people, of all ages and skills - in the center of the process [1,4]. The textiles and fibrous materials are incorporated in many products applied in different industries, with environmental impact [5] during the textile process but also at the end of product life cycle. Similar impacts are facing other fashion industries as footwear and leather industries [6].

The Portuguese Airline Company TAP launched in 2018 a contest focused in Upcycling with their textiles wastes from old aircrafts. Fashion changes and trends can come from different directions and be sourced from different places and entities [7]. Designers take inspiration from many sources and will put imagination and creativity working to develop their prototypes and fashion concepts. This case study shows the design process followed by two young fashion designers awarded in this contest.

2. Design Process

To participate in the contest *Upcycling Project by TAP*, was necessary a design process starting with problem identification and closing with a conceptual design product to submit following the fashion design methods proposed by McKelvey, & Munslow [8]. The contest's rules and conditions had three mandatory topics: design inspired in crew coats; a maximum fabric length of five meters; incorporation of a metallic belt in the final product. All the material applied in the fashion products was from "wastes" used in commercial aircrafts from TAP. The fashion design with this used materials can be an interesting approach to environmental sustainability [3]. The pyramid model presented by Hawley has the "conversion to new products" of wastes (textile and clothing) as important tool of textile recycling [9].

After a careful conditions analysis, was defined the inspiration board by a concept brainstorming. The "Get Away" project is a satiric approach to the fashion world, more precisely to the fashion victims. It intends to express how the consumer lives and breathes "fashion", arrested in a world of perennial change, where belonging to this tribe is critical to be happy. This world closes their victims in a scheme where the appearance and the consumerism are the basis of their attitudes and actions.

The moodboard assumes two sides: a dark side, oppressive, that imprisons, symbolized by the net and the dark hand; a coloured side, where the fashion consumer gets away the trends and expresses itself freely (see Fig.1).



Fig. 1. Moodboard.

2.1. Experimental Design Process

Get Away concept was designed for Fall/Winter 18/19 and the main target was Experiencers according to the VALS (Values and Life Styles) classification. They are fashion-forward, searching by conceptual items, out of fashion mainstream as it is upcycling concepts. Starting from several sketches, framed by the fabric supplied by TAP (only five meters) and the insertion of the metallic belt, with a common design language and having the crew coat as linkage (see Fig.2).



Fig. 2. Sketches.

The chosen product to apply to the contest was a three-piece set, with an asymmetric coat, with a voluminous collar and sleeves, trouser-shorts above knee length and a rectangular handbag which can be attached to the coat. With this set, the contest rules were followed and the designer's idea was carried out.

To select the raw material (fabric and lining) and other trims (threads, zips, etc) was the next step. The decision fell in a blue jacquard fabric with "light blue reliefs". Whereas fabrics used are surplus from previous collections, lining and zips came as the best option according to sustainability principles

(see Fig.3). In addition to these materials, it was necessary to buy woven and nonwoven interlinings to increase the volume of the fashion product.



Fig. 3. The chosen fabric

The digitization of the sketches was the next step. Technical draws and technical sheets were incorporated in the final development and contest proposal. These illustrations gave a general overview of the set, fitting the sewing and colour contrast, keeping a common visual language (see Fig. 4).



Fig. 4. (a) Illustration of the coat and handbag; (b) Illustration of the shorts.

It was possible in this phase to change some details in a few elements, without modifying the final solution.

Pattern making of the different elements was the next step. This phase took a long time to be completed due to the intensity of manual work and the careful set of tasks. While the patterns are in a working process, the defaults or measurement errors cannot be detected, appearing only in the final product. Many times, too late (see Fig. 5).



Fig. 5. Pattern making.

After these modifications, an unbleached cotton fabric having a similar thickness of the final fabric, combined with the interlining, was cut. Then the materials were sewn together to make a “draft” set. With this strategy was possible avoiding serious mistakes that could compromise the whole project. Furthermore, it was possible to define the production process and operations (sewing and pressing mainly) necessary and also set up the sewing machines and other components (threads, needles, machine apparatus, etc) to produce the prototypes without any defaults. Few corrections were done during this step and the prototypes produced were approved (see Fig. 6).



Fig. 6. (a) Prototype of the coat in raw fabric; (b) Prototype of the shorts.

Prototyping was not required to prepare the handbag since the patterns are very linear.

The cutting plan in paper was a preliminary step before the final cutting of the fabric. To be more accurate with part's dimensions, the designers did some shots with a digital camera saving some fabric wastes. This strategy allowed sufficient savings to develop extra tags to complete the set. These three tags (bigger than common fashion labels) had the designers signature manually embroidered.

After finishing the patterns, with all the adjustments and corrections, the designers cut the contest blue fabric to obtain the outer part of the coat, the shorts, and the handbag. After, they cut all the other parts (lining and interlining). Finally, they assembled the interlining with the blue fabric (see Fig. 7).

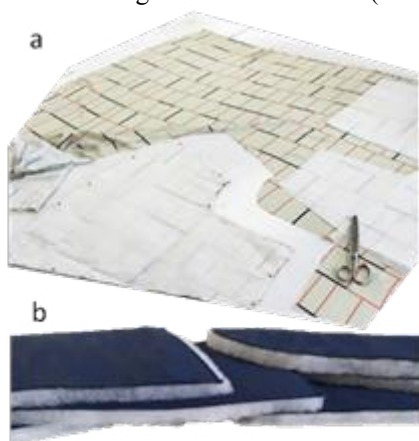


Fig. 7. (a) Cut of the lining; (b) Cut of the main fabric and padding.

The assembling operations of the different pieces were combined with the fusing operation and the overlock of the edges. This operations allowed a better linkage between all the materials. Some handcraft embroidery was applied as design details and prepared with embroidery guides (see Fig. 8).

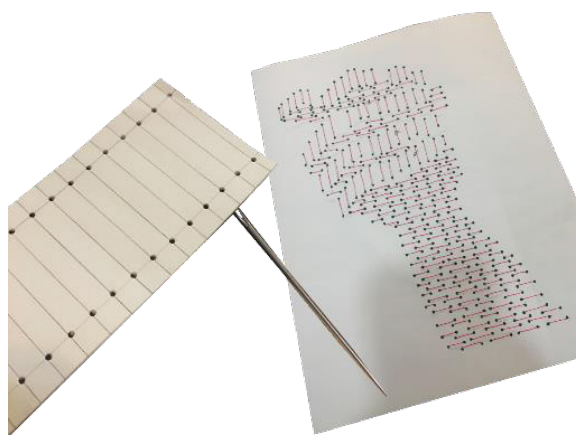


Fig. 8. Embroidery guides.

The sewing operations were defined in the technical sheet and carefully followed during these tasks. To avoid sewing mistakes and corrections is a quality required to achieve an excellent fashion product.

Besides the contest blue fabric, the assembling operations took the other elements (metallic seat belt, zips, tags, etc)

according to the sketches joining them as final products. The seat belt had an important role as a closing element of the coat and to hold the handbag in the final prototype. During the manual coat production, several ironing operations were carried out to prevent the shrinkage of some parts that could change the final aesthetic and compromise the contest performance.

Get Away prototype applies for TAP contest as a classic item (a coat) with an irreverent and modern twist, using the upcycling concept to escape the fast and vicious fashion cycle (see Fig. 9).



Fig. 9. (a) Get Away Suit; (b) Closed seat belt; (c) Lining detail; (d) Handbag; (e) Shorts detail.

The “hand” embroidered in the prototype’s handbag signs the needed perennial pull of the fashion’s victim to the new real world, more conscious and active to the environmental impact of their attitudes. Other details, mainly manual embroidery as is the “net”, signs the individual imprisoned. The seat belt has two meanings: can be a safety object to car drivers and aircraft passengers, but can be also the opening of the prototype as well as the individual fashion consumer to the external world. The unusual position of this closing option means the difficulties found to emancipate themselves. This closing position (zip) allows the usage of the handbag with or without the coat.

2.2. Project Outcomes

The enormous media exposure of the *Upcycling Project by TAP* contest started with the public session in Modtissimo fair. This fair is an exhibition of fabrics and accessories, Portuguese garment makers, textiles for tomorrow and Portuguese tanneries. The previous edition (September 2018) had around 6 thousand visitors during two days in Alfândega building in Porto (see Fig. 10).



Fig. 10. Contest presentation in Modtissimo, Porto.

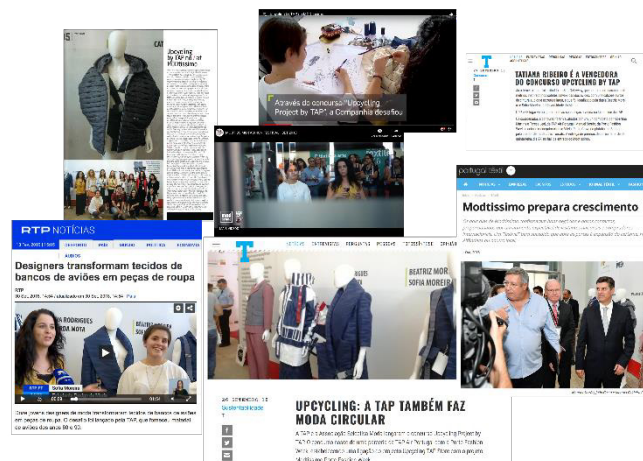


Fig. 11. Articles and online videos about the contest.

This public presentation of all the designers to jury and visitors of their prototypes was recorded and launch in all the platforms from Feira Modtissimo. Upcycling Project by TAP had its own page inside the Feira Modtissimo site. Furthermore, the Portuguese aircraft company TAP had an article on the contest in UP Magazine distributed in all TAP flights around the world.

Other outcomes in social media and television (RTP1) were very important to show the importance of this issue in the future megatrends to fashion industry. Daily news in the RTP on Sunday showed the results of the contest and RPTNotícias presented also some interviews with the three winners.

Newspapers (Jornal T and PortugalTêxtil) and online social media highlighted this partnership and cooperation between an air company and a textile fair.

It is very important to show these cases to a big audience and fashion consumers (see Fig. 11) in the media and mainstream players. In academic conferences, it is quite common to discuss topics such as the upcycling and circular economy in fashion industry, but the audience is mainly researchers and experts. As stated by Ragossnig and Schneider, the circular economy package clearly puts an emphasis on closing the loop on the material side, including wastes from different sources [10]. And next generations of fashion consumers, millennials and Z, are searching for “meaning”, authenticity and conscience in their preferred fashion brands [11,12]. “Green” is the colour of next generations and the textile and clothing companies are preparing the new collections with organic or recycled materials as an important option. An increasing option, indeed, as it was showed in the last Modtissimo, February 2019.

3. Conclusions

The fashion design process is based in creativity and designer’s mental freedom, from conceptual development till garment sewing. An approach with guidelines and previous conditions linked with upcycling and sustainability was a challenge to the designers. To use old fabrics from the aircraft seats and metallic seat belts changed the design process to prepare the final prototype. These textile wastes become raw material in this contest, allowing the development of conceptual fashion products. To solve this “dilemma” of transforming wastes in fashion products with a high value added, the creative design processes are critical. Young designers need to be aware of the circular economy in fashion industry and upcycling is one way to close the loop and reduce the environmental impact of the fashion industry. Other options are possible and desirable, addressing new strategies and approaches to all the T&C stakeholders and academic communities. This approach can be disseminate to other “wastes” producers in different industries or activities.

When companies and organizations from different fields and businesses decide to join resources, ideas and goodwill, to stimulate the creativity of young professionals, the results can be fantastic, as they were in this contest.

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