

Recycling- an Approach towards Sustainability

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ABSTRACT

Recycling and up-cycling are two popular buzz-words in today's society and is a large component of the environmental movement to reduce ecological damage. Recycling refers to those products that are used till they are considered waste and then used again to make similar or different kinds of products. Textile recycling is the method of reusing or reprocessing of used fabrics, fibrous materials, natural renewable resources and clothing scraps. Recycled textiles are generally used in low quality end use thereby downgrading the standards of ultimate products.

In India, clothing plays an important role in deciding one's status since historic period. In today's world, people wear branded clothes to show their fashion sense and financial position in the society. Fashion is considered to be one of the fastest brand industries on the planet and approximately 80 billion new pieces of clothing are being sold every year throughout the world, which is around 400% more than the production of 40 years ago. Fashion employ more than 300 million people worldwide and clothing production has doubled during the last fifteen year. In order to produce 1 kg of fabric 23 kg of green house gases are emitted. Textile industry generates more CO₂ and half of the cloth present in the wardrobe may never been worn in a year. Fashion is now considered as the second most polluting industry and increasing middle classes in developing world for making their own fashion statement, the situation is getting worse. A huge amount of water, manpower, electricity is needed to produce raw materials and that same amount or more is used to produce the final products. As estimated, the total clothing sales will reach 175 million tons by 2050, which will turn the planet into biggest fashion victim. Thus this industry is facing challenges on sustainability.

In this context, the aim of this paper is to show upcycling of textiles in the era of fast fashion. Most of the people is not familiar to the term up-cycling and have the misconception that up-cycled materials are made from second hand products and are not as good as branded clothes. This may be true to a certain extent but to preserve our mother earth it is very essential to think in this approach of recycling and/or up-cycling in the coming years. The objective is to create innovative designs from the activity of recycling. The products are made from used clothes, whereas dyeing and printing of apparels is done by using the waste materials of nature. Bark and dry flowers of trees is used for dyeing; whereas dry leaves are used for Botanical prints on old fabrics. Old sarees are used for making new apparel. The use of recycle materials will reduce the pressure on virgin resources; develop value added creative textiles, provide job opportunities among the surrounding communities, reduce the ecological damage and make people aware of using recycled textiles.

KEYWORDS: Creative, Environment, Fashion, Recycling, Textile, Up-cycling

INTRODUCTION

In the 21st century, the developed countries are very much concerned on polluted environments and its adverse effect on nature. The major concern of the present world is to seek different eco-friendly alternatives for better present and also to secure future. Sustainability and recycling are some of the modern concepts to overcome the problems associated with pollutions and wastes. At present, many industries are also keen to search for an alternative of conventional processes and want to produce through eco-friendly ways due to stringent Government policies related to environment [1]. The apparel exports from India is expected to be around \$22 billion in 2020-2021 as compared to \$15.4 billion in the last fiscal i.e. an overall growth of around 40% is expected during this financial year and the major focus will be on medical textiles (AEPC, 3rd September, 2020). Advancement in technology and rapid change in fashion are the key factors for huge production in textile and apparel industries. These huge productions are always associated with environmental pollution and generation of waste. In the present lifestyle, production cannot be limited and hence one has to create alternative ways of recycling to reduce the burden on nature and also to secure the future generation. In textiles, two types of wastes are commonly generated i.e. pre-consumer waste and post-consumer waste [1]. Pre-consumer waste can also be termed as manufacturing waste and clean waste, which are generated during various stages of processing i.e. fibres, yarns, fabrics and garments. Post-consumer textile waste i.e. house hold waste and dirty waste are generated from out of fashion apparel and textiles which is discarded, worn out and damaged cloth which is no longer in use by the consumer. Most of the post consumer waste are either disposed off into the trash, which ends up in landfills or given to charity.

Some of the major reasons for the generation of textile waste are i) rapid change in fashion, ii) easy availability of textiles at cheap price, iii) lack of consumer awareness about environment friendly textiles, iv) misconception about the word 'recycling textiles', v) weak government policies, vi) industrialization, resulting into huge production, vii) over consumption by the customer, viii) low popularity of second hand clothing and ix) lack of systematic pipeline of textile recycling.

India, the country with various religions and culture is practicing recycling activities since long time. Most of the recycling activities are considered as the substitute to overcome financial crisis. Some

of the most common practiced are: i) use of old cloths for new born baby, ii) as substitute of sanitary napkins, iii) for dusting and moping in house hold purpose, iv) for stuffing soft toys, pillows and mattresses, v) in making of cushion, curtains and other household items and vi) handing over the traditional textile to the next generation.

The global demand for textile and apparels are increasing steadily due to population growth and economic development [2] and the industries are also facing environmental and resource challenges. Amongst all the fibres used in textiles almost 63% are derived from petrochemical resources [3] and remaining 37% is dominated by cotton (24%), a thirsty plant associated with water depletion and toxic pollutants due to intensive use of pesticides [4].

At present, circular economy concept has gained momentum and the circular economy system diagram by the Ellen MacArthur Foundation highlights the importance of reuse and recycling in a potential future circular economy [5]. Reuse and recycling in the form of down cycling is a well established method in the textile industries. In Europe about 15-20% of disposed textiles are collected and rest is either incinerated or used for land filling. 50% out of 15-20% collected textiles is down cycled and remaining is reused [6]. Textile reuse and recycling in general reduce environmental impact compared to incineration and land filling, and that reuse is more beneficial than recycling.

In this context, the aim of this paper is to create innovative designs from the activity of recycling and also to produce a different range of products with aesthetic appeals through the utilization of post-consumer textile wastes viz. old sarees, cloth etc for self consumption.

RAW MATERIALS

Several old traditional sarees viz. Jamdani sarees, Sambalpuri sarees of Orissa, Tant, the heirloom of every Indian family and possessed by grandmothers and mothers was collected for this work. Cotton Ikat weaves Dupattas and several other waste fabrics were also collected from the family members. All these post consumer textile wastes were used as raw materials to create apparel with new look and aesthetic appeal through upcycling.

Fabrics, flowers and seeds were used as raw materials for jewellery making. Waste cotton fabrics were collected from the tailor shop and from

home, whereas dried flowers and seeds were collected for making beads.



Fig.1 Raw materials a) Old saree and b) leftover fabric & dried seed

METHODS

Pretreatment of Raw material

In order to remove the dirt and dust, and also pungent smell from old/used fabrics, those were washed in a solution containing 5 g/l detergent at room temperature for 45 minutes, followed by cold wash. Aqueous extract of Neem leaves was prepared by boiling 100 g of Neem leaves in 10 litre of water for 10-15 minutes and allowed to stand for 60 minutes for cooling and finally filtered through a nylon bolting cloth. Such filtrate was used for treating all the detergent washed old/used fabrics in order to make it disinfectant. This process was done at room temperature for 30 minutes. It is a very crucial step before starting the actual production process since it removes the fungal growth, and odor from the old fabrics. It also makes the old fabrics safe to use and skin friendly.

The seeds used for making jewellery were also washed in detergent water and kept for drying in sunlight before use.

INSPIRATION AND STORY

Inspiration from the real life story behind the products helps to create features of individual designs. Every part of India holds a rich culture, tradition and beauty. Every family has its own heirloom filled with memories. Clothing is something that carries memories generation after generation. We have grown up watching our grandmothers and mother wearing sarees at different occasions. So, many emotions, feelings and memories are associated with those sarees. Being a child, we all wanted to wear sarees but unable to do so. Now when we are all grown up, we understood that fashion changes with time but that does not mean those clothes can only be made by new materials.

The present work is inspired from the 'busy city life'. In this modern busy life, women and men have no time to wear sarees and dhotis in everyday basis. It is often seen that even a very costly and good quality saree loses its shine because the descendent of the owner was unable to wear it in

her daily life. We can reinvent these emotions filled sarees and then modify them into modern day comfortable clothes which can be worn in all-seasons. It will not only showcase the essence of emotions but it will also save energy, time and money. During our research we came to realize that most people hesitate to wear clothing made by used or old materials as they are unaware of its using history. When we are using apparels made out of sarees that were once used by our grandmothers/mother, there are some sensational emotions, which are not carried forwarded to others who are unknown. Everyone has their heirloom clothing items in their wallboards or some valuable sarees, gifted by someone long back, may be those became old with time but a strong sentiment behind it never dies down. Our purpose of this concept is if we can renovate or makeover those products into a new product instead of keeping those sentiments lock in the wardrobe, it can breathe again. The casual fashionable outfits made from the old traditional sarees and leftover materials not only support sustainable fashion, but also depict the beautiful stories behind each saree everyday at the time of wearing.

The multi coloured neckpiece and earrings is inspired from 'Guduri', the patchwork dress of Baul (folk singer) and musical instrument 'Ektara' of Bankura and Birbhum district of West Bengal. The other earring is inspired from the frill work on hand fan.

COLOR PALETTE

Designers derive the colour palette by picking different colours from the heirloom of old sarees and use those colours for fashion communication. Color palette is made using all the colors available in the raw materials. This will give a feeling togetherness in the final product. For individual garments, a separate color palette along with visual details has been made. Color board also helps to mix match the color in order to achieve a vibrant look of the garment. Color board is made with the help of pantone color palette.

ILLUSTRATION

Illustration is done in order to get an idea of the original product and also to make the manufacturer to understand about the look of the final product.

Garment

Illustrations of the garments are made without



Fig.2 Illustration of a) short reversible jacket, b) long jacket, c) one piece dress and d) crop top and palazzo

Jewellery

First a rough sketch of the earrings and neckpiece is made. According to the sketch, the

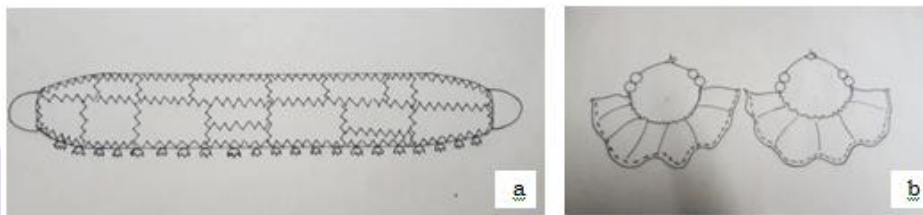


Fig.3 Illustration of a) neckpiece, b) earrings

PATTERN MAKING AND GARMENT CONSTRUCTION

After illustrations, various patterns are developed for garment construction as per the standard process of pattern making with the help of different pattern making tools. A standard measurement is taken of size XS and the measurement pattern is made according to the designs.

Fabrics and linings have been cut according to the pattern and the size chart. After cutting, the fabrics and the linings are assembled according to the designs.

Garments are constructed by the help of Single needle lock stitch (SNLS) type sewing machine and stitching is done with cotton thread.

In case of jewellery, a standard measurement is taken for the neckpiece. All the fabrics are cut

destroying the traditional feel of the material in the casual outfits. The casual outfits viz. long jacket, a short reversible jacket, one piece dress, crop top and palazzo, scarf, stole are made so that people can wear in their day to day life. The illustrations are drawn on Buff cartridge paper so that it gives a clear view of the dresses.

raw materials are used. The designs are funky and casual so that it can go with any western outfit and can be worn at family parties, picnics etc.

according to a particular size in square form. For the earrings an old used blouse is cut into long rectangular shape according to the size. Some waste fabrics are cut into small square shape to make simple yet gorgeous earrings. Seeds are used as a bead in jewelry.

In this case, all the fabrics are cut according to the size and alternate color. For earrings, the waste fabrics are cut into small pieces and rectangular shape.

The small pieces of the neckpiece are stitched all together and giving a loop on both side of the neckpiece to secure the chain of the neckpiece and small dry seeds are stitched on the lower side of the neckpiece. The rectangular piece fabric is stitched and put inside a ring and silver balls are given on both end of the ring. For another ring, the small pieces of fabrics are put inside the ring and in the middle of the ring dry seeds are placed as a bead.



Fig.4 Pattern making and construction

SURFACE ORNAMENTATION

Surface ornamentations are carried out on the fabrics as per the design requirement. Run stitch is used on Tant saree and /or Jamdani in geometrical motifs all over the dress. Geometrical designs motifs with run stitch is also used in Jamdani stole. Patch work on a crop top is done by using several waste fabrics. Appliqué work is also done on bottom of the Palazzo pant and small square waste fabrics are attached on the pant. In case of jewellery, different embroideries such as zigzag stitch, run stitch are used. On the necklace

zigzag stitch is given in order to secure two fabrics. Dry seeds are used as beads on the lower side of the necklace and also in the earrings.



Fig.5 Surface ornamentation technique

I. IRONING

Ironing with control temperature is done on every apparel before and after the constructions to avoid crease and unnecessary puckering.

I. STYLING AND PHOTO SHOOT

All the outfits have been styles in a way that are goes well with each other. Matching shoes and jeweler are given with every dress. All the outfits are being worn by model for photo shoot. Outdoor and indoor both places are chosen for photo shoot. Photo shoot has also been done for earrings and neckpiece. Photo shoot is performed with the help of ASLR camera. Contrast background surrounded by the jewellery give a beautiful effect.



Fig.6 Photo shoot of garments a) short reversible jacket, b) long jacket, c) one piece dress and d) crop top and palazzo

Model: Anurati Chaudhuri



Fig.7 Photo shoots of textile jewellery a) earrings b) neckpiece

Model: Anurati Chaudhuri

CONCLUSIONS

The recycling effort is connected with recycling, recyclability and source reduction of post-consumer textile waste. It offers a whole new life of waste materials through recreation to a new life. The process of recycling is economically beneficial, yet much of the discarded clothing and textile waste fails to reach the recycling pipeline. The use of recycle materials reduce the pressure on virgin resources and also load on our mother earth in addition to the development of value added creative textiles. This effort of recycling also provide job opportunities among the surrounding communities, reduce the ecological damage and make people aware of using recycled textiles, which ultimately indirectly help to improve the welfare of the community. We as a designer approaching everyone to bring out their heirloom clothing items with undying emotions and reuse those clothes according to preferred designs so that it can be wear on daily basis. We hope that this concept will do justice to the new fashion world and will be attached closely to one's heart. This upcycling will give a new life to the old traditional sarees. Hence it is the time to think and make up our mind to use recycled products. Government intervention, policies, consumer preference are also very essential to make this concept sustainable.

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