

# *The Macrotheme Review*

*A multidisciplinary journal of global macro trends*

---

---

## A SUSTAINABLE DESIGN TECHNIQUE FOR RECYCLING OF WASTE CLOTHES

Serap TANRISEVER  
*Selçuk University, Konya, Turkey*

---

### Abstract

*In this study, there is a sustainable design technique to make the waste clothes put on again by using reconstruction technique. It means that it is a kind of using the clothes again by using this technique. Waste material is one of the most important reasons for pollution today because environmental awareness is increasing day by day. Clothing and apparel wastes cause pollution seriously. In many countries, there is not rational recycling sector that belongs to clothing sector. The waste textile materials don't need to damage the people and environment while burning, storing, languishing or destroying of those waste materials. Recycling is the best solution in this area. Today, artists have used different kinds of materials in their designs to get attraction for pollution. Reconstruction technique can be seen a study of evaluation of waste clothes in terms of creativity and artistic ways. Especially, fabric, types of yarn, stamp-beads, decorations materials provide possibilities of evaluations( interpretation)of clothes again and re-using of them. In this study of the reconstruction technique that has been explained its applications, it has been created (formed) nonwoven webs by sewing threads connected with the colours of clothes of course. These surfaces (clothes) have been applied to clothes by designing like fabrics. The aim of the study is to provide ana area for fashion designers in terms of creativity of course thanks to waste clothes and apparels with recycling. Of course to do a sustainable study and have attraction of its growing up, it is good to apply this technique.*

Keywords: Zero Waste Fashion, Reconstruction, Recycling, Sustainable Fashion, Product Design

### 1. INTRODUCTION

Apparel passion is over in terms of historical, cultural and geographical boundaries. Even if there are differences between forms and contents, the docoration of human's motive doesn't change as an extrovert identity. The concept of fashion based on the word of "facito" that means "doing" in Latin, has expressed the concepts of compatibility, social relations, rebellion, desire of become different, social expectations and status, seduction and deception. There is a usual information about the concept of clothing based on fashion that belongs to the World of West. Moreover, the roots of fashion(clothing) separates from traditional clothing by the effect of French in terms of stripes and section(cutting). Also, there are special sewing techniques that have been applied to

those clothes and in fourteenth century. Many historians have seen the industrialization, that had been lived in the middle of nineteenth century, as the beginning point of fashion. Determining of fashion's styles by a tailor or fashion designer begins in this period. (Fogg 2014:8-9).

The place of clothing as a concept of fashion is not coincidental. Both the objects that are different from other components of clothes and the physical elements have taken this role during the history of humanity. But the expression of being different of each other comes from the holding of fabric of body. Also, it comes from its birth till the death in days and nights. (Waquet, Laporte, 2011:10). Today the fashion has become a cheap subject, so the cheap fashion has created a quick consuming fashion. Wearing the things out quickly, extreme consuming cause environmental, social, economical problems and all these things make the customer expose of quick and artificial changes in terms of perception of fashion. Today, the quick fashion has become a thought method based on consuming. It means that the people buy what they want and a few weeks later it becomes old fashioned and the clothes become waste. (Gürçüm, Yüksel 2012:49).

80 million of clothes, that comes 11 fragments for a person all over the world, have been produced. Today we consume more than % 60 of clothes comparing to ten years before. It has been predicted that the values of clothes that had been bought and put to stores and haven't been used then about 140 million. Moreover in China, it has been estimated that the waste of textile that has been produced in a year is about 20 million tones. The increase of numbers on clothes' products such as produced, sold, thrown out clothes gives the importance of effect on people's and environment's health related with the life of these products in all sections. Even the smallest amount of harmful chemicals that are used legally in textile products like NFE cause to spread all our planet quickly. (1), (2).

If the natural sources are limited and are not used in a useful way, the danger of consuming becomes the most important case especially in developed countries in the world. So this case has been settled into a legal frame. In Turkey, these studies has become important and started after beginning in negotiation with EU. In order to accord with EU standards, the new regulations have been produced and become actual or regulated again. (Yıldız, 2012:3) Waste material is one of the most important reason of environmental pollution in today's world because the people's awareness is in a very high level in society. All materials that have done their duty become waste. All kinds of materials that we don't need and leave them out of life can be described as waste. Textile sector is one of the industry branches that consume energy, chemical material, weather(air), mostly water as well. The textile products that provide at least three necessities of people are the most important product groups that have relations with the body of people after foodstuffs. It doesn't need to damage the people and the environment while being burnt the textile products, leaving them decay, stocked or destroyed in another way. In this case, the most important solutions is recycling. (Bayraktar,2005:3)

It has been known that the amount of energy, in order to gather a textile product, classify and sell again, is ten or twenty times less according to have new product. There has been great influence on ecological problems of textile technologies that have been improved today. Textile materials provide economical and environmental gains thanks to recycling. As the time is going on, the corruption of global environment has been interrogated. (Göksel, Yanmaz,1012:34).

## 2. A SUSTAINABLE CONSUMING AND FASHION

It has been forced to apply the development work with the industrialisation and increasing of limited sources and consuming of them, causing the waste of things for pollution, and consuming of some species. (Sahni, 2010: 86) The concept of sustainable development has been presented with the report of “Our Common Future” by United Nations Environment and Development Commission. Sustainable development is a kind of development that provides today’s necessities without paying anything for the next generations. It means that next generation shouldn’t lose any skills to provide their own necessities. (W.C.E.D, 1987: 43).

The innovations and developments in product technologies were able to give answers to the increasing necessities of population by creating more product bulk(size). Consumers were able to reach their necessities at the end of production, after that they were able to buy the things they needed or not. According the increasing demand, consumers have produced and consumed the necessary sources excessively. The presence of capitalist economy, production, management, advertisement and bargaining have directed the consumers not to satisfy with little products. Moreover, consumers have always wanted more and more in an unconscious consuming according the demand. Finally, there has been the consuming society in an unconscious way who resemble each other and behave like that in developed countries and the countries that follow developed countries. (Özdemir,2013:5).

The expression of the sustainable consuming is different from traditional consuming comprehension so it has provided the behaviours of consuming, have been interrogated as the concept of result that emphasized the dimension of consuming result. (Hayta, 2009:73). All the processes about buying should be redesigned according the another perspective of paradigm. Sustainable consuming is not a new method, it is a perspective of thought. It has to require all processes being evaluated and created useful thoughts. (Özdemir,2013:15). There has been a field of “desires/demands” that the market has managed in consuming society. But there should be a field of “needs” in order to be speculated from sustainable perspective. The unlimited product differences that have been seen in markets today, are because of the demands that the people requested. In addition, it is not because of the needs of the field. Need is a kind of being stressful during the time of absence of the thing that you need. (Siegel, 1996, s.15). The needs of people are the described concepts of physiological, safety, love, esteem, regard making yourself come true that the people have faced with( encountered). But the desire is being preferred when the people need it. (Gerrit ve Fred, 1998).

One of the most sustainable activities is “sustainable fashion” has become the “quick fashion” around the world lately. Moreover, echo fashion, green fashion, slow fashion include the sustainable concepts among them. Sustainable fashion means refusing (rejection) of being attractive, using fashion products, joining the consuming things. It also stands against fashion eğilim (routine).

There are not only ethical production or echo fabrics in sustainable design but there are also designing of clothes again, reducing of waste fabrics, designing of vintage (classical) clothes, using the energy effectively, supporting the local production, classical designs, multifunctional structure, smart materials, designing again with modular designs(concepts) during using of them. It is also called “slow fashion” that the manufacturers have begun the current idea and help the things recycling. The sustainable fashion that doesn’t care the consuming of fashion products and cheap ones, the standards, production with marked and certificated, eco fashion that interests

ecological production, using the product in a long time, its functionalism(function) and enduring make the people not to buy the other fashion items. So slow fashion becomes anti-thesis against the comprehension of quick consuming products. Because of this, there are important and conscious tasks(duties) for fashion designers. (Gürçüm, Yüksel 2012:51). Spreading of video art, begins in 1970 and 1980s and goes on in 2000s, using of photograph in contemporary art, exhibitions, globalization created the field of recycling in art. In many countries, there are projects about art and environment that become real, and lessons in the contents of universities. Of course there are important contributions of artists on enviroment movements. It should be taken into consideration that there is very big power that the concept of design has in order to gain the environment again. It should be the fist topic in terms of all ways. (Somay, 2008: 27).

The waste of sources can be preventedby being applied these things such as the consumers have conscious of environmental problems, using second hand items, recycling, re-using of clothes. When these behaviours take place in society, the waste of sources can be prevented. There is one issue that we don't need to forget is that there is not a second to lose time to protect environment and all the precautions should be taken into consideration immediately in common rersponsibility. (Madran, 1992:21).

It is a happy development to have a common comprehension like this and still developing in world. Non-governmental organizations, associations, universities, public and private companies, artistic projects, media outlets support environment and sustainable approaches unlike past. But it is clear that they are not enough.

### **3. ZERO WASTE FASHION**

The designers of fashion who have the sustainable fashion mission today have been canalizing their designs into this way with the zero waste approach in fashion. Zero waste fashion can be accepted as a part of sustainable fashion movement. Zero waste fashion means no waste or little waste in clothes production. They minimize the using of fabrics unnecessarily and decrease the waste of textile materials. Zero waste is a kind of design technique that removes the waste of textile during designing. It can be seperated into two approaches. Pre-consumer produce clothes before there is waste during production of clothes, last-consumer makes the clothes use longer and creates a new clothes without wasting them. Of course this a kind of approach as well. (3)

Emty and losses of clothes are the most difficult elements that should be taken into consideration for apparel industry. All costs can be appeared as zero to zero when added the costs of empty and losses of clothes on. According this cost, it can be priced of the product. It is very difficult to determine the empty and losses because it can not be seen actually. Wastage and losses in commodities can be expressed as percent after long experiences. But it is also difficult to determine wastage in expenses of materials. It becomes clear that the wastage reaches the big numbers in apparel(prepared)clothes, when, how much you damage from threads, how many labes lost, how much material is still on hand and useful, calculated. Finally, it should be provided to determine the costs rightly of course with wastages and losses of clothes. .(Gürsoy:2010:335) During a standart process of confection production, the rate of cutting of fabric is about %15 and mostly thrown(chucked) them away.

The concept of sustainable fashion design decreases the waste of textile and demand of natural sources. The designer affects the product in terms of the environmental and economic costs about out of % 80-90 with the decision that she has had. It means that the designer has a very

important role on his own product, materials that he has used, selected suppliers and of course technique of design. There are also designers who use the wasting(wastage) of textiles in their designs by taking this as opportunity. Designing zero waste fashion has serious responsibilities such as molds, patterns and shapes engineering, environmental sensitivity, functionality, fabric and material knowledge, process management, machine tools and knowledge, production management.

Some of the designers, who were aware of this case, started to design exciting fashion products. Some of them are Ada Zanditon, David Telfer, Hellen Van Rees, Holly McQuillan, Issey Miyake, Julia Lumsden, Julian Roberts, Mark Liu, Timo Rissanen Gary Harvey, Christopher Raeburn and Zhang Na. Moreover, the brands like H&M, Nike, Espirit, Shanghai Tang support the approach of sustainable fashion in the world. Also they benefit from those designers who applies zero waste fashion. Estethi at London Fashion Week, and Ecochic Design at the Hong Kong Fashion Week, it has been given awards to designers who produce zero waste fashion clothes. In addition, they have applied activities that create awareness (4).

#### 4. THE TECHNIQUES OF ZERO WASTE FASHION

Waste fabric and evaluation of clothes are not a new subject. It has been done since older times. It has been seen as if it has lost its importance and value because of the evaluations that had been done before with the absence. There are three different techniques to decrease the waste (fabrics) in zero waste fashion approach(application).

**1.Zero Waste Design:** It is a kind of design technique that removes the waste of textile during the process of design. There are various approaches in the production of zero-waste fashion. It consists of using all fabrics in a useful way or cutting according to fabrics or build of the clothes as knitting as a whole dress or using zero waste pattern. Old clothes can be given as an example. From traditional Turkish clothing, three skirts, shalwars shawls, men and women underwear, kimono, yellow and many other traditional folk costumes are examples as well.

**2. Using of Waste:** Designers use the wastages of textile in new designs of products. Waste and losses are the main case that has to be observed in apparel(prepared) clothes industry These quality products/materials can be converted into new products by various techniques.

Sewing new clothes by combining the waste pieces, using them repairing for clothing, creating new textile surfaces such as forty patch, are just a few.

**3. Reconstruction:** This is a process of creating/making new clothes for the materials that have been worn before. Designing clothes that are in the wardrobes, clothes that are not used or second hand clothes, is another kind of recycling. (2) In this work, extension process has been applied on women's shirt by using reconstruction technique because her shirt is narrow and becomes waste. Now it can be worn again. This is a kind of applied study.

## 5. A SUSTAINABLE DESIGN TECHNICAL STUDY

**Materials used:** Buckram that melts in water, ( there are types of matt and transparent) , sutures of the colours of shirts, sewing machine, sewing materials.(scissors, ruler, measure, needle, etc.).

**Application:** 1.The sides and underarm of the expanded shirt has been separated by dismantling ( ravel).



**Photograph 1-2.** The process of dismantling the side seam of the female shirt.

2. There has been placed blue, white, black threads freely for the buckram that has been cut with the dimension of shirt extension and melted. (preferably matte color) This process is up to the designer's design pleasure and creativity completely. So there can be lots of various designs according to designer's pleasure and creativity independently.



**Photograph 3.** Threads that have been put the (white-colored) melted buckram on freely.

3. It is being put buckram again on the designed work/material (preferably transparent) like the dimensions under this picture(buckram). Blue, white and black threads that have been put in two buckrams freely, attach to each other with the aid of a needle by taking care not to shift. You can also get tacking on it. After this process, sewings are attracted in a desired forms with colored threads thanks to sewing machine. This is part of design as well. Thanks to getting threads with sewing machine, the threads are fixed. It creates a nonwoven fabric thanks to this process. So you create your own fabric that you have designed.



**Photograph 4-5.** The process of placing transparent melted on the threads placed on thrown threads freely.

4. After this process, the fabric is put in a basin with warm water . So the buckram melts and disappears, only there are threads and sewings. The fabric takes out of the water and being dried and ironed.



**Photograph 6.** The process of putting all materials into warm water and destroying the buckram.

5. The fabric has been seperated into two parts after it had been ironed and dried. The seperated dimensions have been regulated by cutting in a necessary measurements of course connected to width and side seam and under the arm seam's length.



**Photograph 7.** The process of cutting the created fabric into two and its regulation.

6. The regulated shirt has been sewed by sewing machine as side seam and under the arm seam by checking the necessary measurements before sewed to shirt.



**Photograph 8-9.** Sewing of fabric on sewing machine by checking the fabric's width and length.

7. The fabric shares that had been sewed both two sides have been cleaned by overlock machine and completed by sewing on sewing machine by curling hemline( the last point of skirt)



**Photograph 9.** Finishing the fabric by sewing on underarm ,side seam on the shirt.

## 6. EVALUATION

The sustainability after use is a kind of evaluation of products after the process of consumption. Thanks to the methods of clothes' evaluation, it will be a good solution for the problems of environment and economics that is why we use the waste fabrics for new items. Moreover, we recycle the things instead of throwing them to environment. So, a narrow female shirt has become a cloth that has to be worn in a relax way by doing necessary applications of course. For the process of expanding, it has been created nonwoven fabrics with sewing threads, and suitable colors, The fabric has been expanded by sewing side seam under the arm seam. This study and technique has been thought as a recycling of clothes/fabrics.

## REFERENCES

- Antonides, G., Raaij, WFV. (1998), "Consumer Behaviour, European Perspective", Chichester: John Wiley and Sons, Netherlands.
- Fogg, M. (2014) *All Story of Fashion*, Dreamer (Hayalperest) Publisher, İstanbul.
- Göksel, N., Yanmaz K. (2012). "The Research about old clothes for reusing of them" , 1st International Fashion and Textile Design Symposium Akdeniz University, Antalya.

- Gürçüm, B., Yüksel C. (2012). "Trends which "Decelerating" The Fashion Industry: Eco Fashion and Sustainability in Fashion", 1st International Fashion and Textile Design Symposium Akdeniz University, Antalya.
- Gürsoy, A.T. (2010). *The Clothing Culture and Fashion*, Textile Industry Employers' Association of Turkey, Life Printing Co. Istanbul.
- Hayta, A. B. (2009). "Sustainable consumption and family", TSA Journal, 13 (3), Ankara.
- Madran, C. (1992). "Environmental Protection and marketing", Cukurova University, Social Institute of Science, Master Thesis, Adana.
- Özdemir, Ö. (2013). "The Role of Personal Values in Sustainable Consumption Behaviors The Study of Lecturer Women's Behaviors of Extraction of Clothes", Cukurova University, Master Thesis, Adana.
- Sahni, H. (2010). Towards Sustainable Fashion – Computer Technology Integration for a Green Fashion Value-Chain, [www.fibre2fashion.com](http://www.fibre2fashion.com) (5.12.2014).
- Somay, V. (2008). "Art and Environment", Recycling Magazine, July-August-September.
- Siegel, C. F. (1996). *Marketing: Foundations and Applications*, Chicago: Irwin Mirror Press, A.B.D.
- Waquet, D., Laporte M. (2011). *Fashion*, Dost Publications, First Edition, Ankara.
- World Commission on Environment and Development, (1987). "Our Common Future" Oxford University Press, Oxford, New York.
- Yıldız, O. (2012). "Legal Problems of the Recycling Industry in Our Country", Recycling Magazine, October, November, December, <http://www.geridonusumculerbirliigi.com/>
- Greenpeace, "Zehirli Giysiler", <http://www.greenpeace.org/turkey/tr/press/reports/zehirli-giysiler/> (03-11-2014) İnternet 1.
- 1% For The Planet - Give Back To Blue, "Designing want from waste", <http://onepercentfortheplanet.org/2014/09/designing-want-from-waste/> (08-10-2014)İnternet 2
- Wikipedia (The free Encyclopedia), "Zero-waste fashion", [http://en.wikipedia.org/wiki/Zero-waste\\_fashion](http://en.wikipedia.org/wiki/Zero-waste_fashion) (05-11-2014) İnternet 3.
- The Ecochic Design Award, "Zero-Waste Design Technique", [http://www.ecochicdesignaward.com/wp-content/blogs.dir/3/files/2013/07/LEARN\\_Zero-waste\\_ENG.pdf](http://www.ecochicdesignaward.com/wp-content/blogs.dir/3/files/2013/07/LEARN_Zero-waste_ENG.pdf) (03-11-2014) İnternet 4.