The Study of Classifying Recycling of City Waste Textile and Garment

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Keywords: City, Waste garment, Recycling, Renewable material.

Abstract. With the city developing rapidly, the waste has been the human common issue and the waste garment has been a serious environment problem and pain point during the city developing due to the increasingly large proportion in city solid rubbish. From the professional perspective, the author believes that it is very important and necessary to backtrack the beginning of waste garment generation and take the waste garment classifying on as the object of research, therefore, the paper discusses the classifying approach of waste garment, the market value and social value comprehensively and systematically. At same time, according to industry characteristic, the article suggests that classifying of waste garment should be refined so that maximize value of waste garment and create conditions for eco-civilized city construction.

Introduction

With the urbanization, there are four megacities over 10 million in China. Rapidly increasing population provides the huge power for city development, meanwhile, there are lots of realistic problems following. As a necessary in daily life, life cycle of clothing refers to great quantity resource consumption and various social problems. China is a producing and consuming country of clothing. According to the estimation of Textile Industry Union of China, the annual amount of waste textile generated is over 20 million and it is mainly from all megacities. In addition, China is also an uniform production and consumption power, the retired uniform, coming from military, police department, commercial department, revenue department, etc. is also over one hundred thousand every year. Most of waste clothing could not be reused effectively and the utilization of recycled raw material is less three of ten thousand, is far below the average level of world. Besides, the landfills and burning are mainly treatment method which is too single to make cities severely suffer from rubbish surrounded.

As the necessities and the second skin, clothing has close relationship with human daily life. Therefore, construction of green wardrobe not only is propitious to help people to purchase clothing reasonably and dispose waste garment scientifically. Besides, it will benefit to construct harmonious relationship between people and city as well as sustainable ecological system when human beauty themselves.

Classifying According to the Position in Lifecycle

Produce Periods

The leftover material is main cutting bed remaining material during procedure of clothing production. These materials are clean and can be used for making toy, accessory and the other productions. The leftover material from cutting bed is inevitable and normally accounts for 10%-15% in usage of whole fabric. Even though they are not clothing, it is still one of the original of waste clothing, especially the popular of draping production which increases the quantity of cutting leftover. Currently, “Zero waste design”, “Zero waste cutting” and some public welfare activities around leftover of cutting have been important approaches of source reduction of waste garment.

Usage Periods

The period points the stage when the production enters the market and generate its value of usage. With the prevail of fast fashion brands, such as ZARA, H&M, the life cycle of fashion is getting shorter, most
of garments have been put in wardrobe due to not fashion. Those clothing have some prominent advantages in recycling, like high value, low pollution, easy treatment of sanitation, which is the most important and valuable stage during the recycling of waste clothing and they can be dressed after reasonable allocation. For example, the UNIQLO launched “thanks for recycling”, an activity of old garment donation and PACLANTICK generated the “clothing acting, mind moving” activity of children’s wear recycling and donation, which it not only keep on the usage value of garment, but also integrate the industry, society and consumer into together closely.

Abandon Periods
The garment will enter the discarded stage after out of valuable usage, such as broken, defiled garment severely. The abandon things could be transferred another raw material of other production after effective disposal, in other words, it means rebirth of life. There are three levels about the waste transforming value, that is upgrade transforming, level transforming and degrade transforming, therefore, the scientific classification can improve the transforming value effectively. In the condition of avoiding second pollution, variety recycling productions to take waste garment as raw material can be utilized on road bed construction, car textile, carpet and curtain as well as home textile.

Classifying on the Purpose of Recycling

Purpose of Keeping Wearing
To classify and clear for recycling garment, some of garment with usage valuation can be reused through cleaning and treating and the usage value can keep on. To wear continuously is the best way of garment regeneration and popular and allocated approach to resolve city waste garment in the world. Some public welfare organizations sell second-hand clothing professionally, like Goodwill, Oxfam, Emmaus, etc., get high reputation and prompted widely. “redesign” has been a new work of fashion designer who gives the second-hand garment new life after redesigning and the works are regarded “eco-fashion”. Today, ecological construction is more and more important, the prevail of second-hand garment has been the new life way and symbolization of civilization degree of city.

Purpose of Obtaining Raw Material
The purpose of obtaining raw material is to get new raw materials from waste clothing through relevant technology to reweaven, including physical and chemical way. Recycling of raw materials has broad space of development which refers to polymer materials, textile engineering, mechanical manufacturing and it is the important trend of eco-fashion development. Cangnan area in Zhejiang province is a typical area of China where physical method of waste clothing is dominated and whose recycling textile not only fill the gaps of the domestic, but also export abroad; while Teijin limited company of Japan is representative of chemical method, its unique technology of “ECOCIRCLE” is a close loop system of recycling “from fiber to fiber”, the project has covered office supplies, daily life articles, civilian engineering materials and car textile, which economizes a large of resource and energy.

Purpose of Energy Reclaimed
It is usually to landfill or burn to deal with those waste clothing no any value to use. But landfilling will occupy the limited soil resource and generate the other negative problems, such as, needing long time to the decompose naturally, generate severe pollution to underground water. Burning the waste garment to covert the heat energy to produce or generate electricity, this method was popularized in early stage, while in recent years it has been challenged constantly. Energy recycling is a way of low level of recycling and is also a dominant approach of waste garment in many countries up to now, it is easy to generate new social contradiction and must be resolved quickly accordingly.
Classifying Based on Production Value

Wearer

The value of garment has changed according to the different wearers which is the embodiment of social characteristic of fashion, for example, some political leaders, celebrities, superstars, sport stars, etc., whose garments have high value because of their halo effect. Especially, the famous fashion designers’ collections or some special activities that will enhance the value of fashion further, for instance, the black pointed bra was designed by fashion genius Jean-Paul Gaultier and Madonna wore it in her Blond Ambition World Tour, it was sold for 14.1 thousand Pounds at Christies auction in 2001 and was the 3 times of expectation value; the film, Breakfast at Tiffany’s, is Audrey Hepburn’s first well-known work, the gown was designed by famous fashion designer Givenchy, the expectation sold is $ 800 thousands. As a result, many of second-hand garments have been collected by diversity museums because of the special valuation.

Brand Valuation

The value of production not only contain the production itself, but also the additional, like brand value, which is particularly outstanding in luxury and fashion. Some famous fashion brands have high additional valuation, even the second-hand garments still have high price. Those famous brand garment, suitcase, accessory, shoes, etc. can be sold again as a high price after professional treatment. In everywhere of the world, especially in those economic development cities, there are lots of practitioners to be engaged in it. They are responsible for the recycling, treating and selling of second-hand productions to form a strong trade system of second-hand brand fashion. Milan Station is one of representative company to go in for the second-hand garment deal professionally whose networks spread in domestic cities. With the development of internet market, the volume of business of second-hand brand garment has been improved further.

Value of material

The value of material is physic attribute of production and the core element of forming the price of garment. The high value of material of garment has a superior quality for keeping the performance, as a result, the recycling price is higher than usual, such as fur fashion, woolen fashion, silk fashion, etc.. Because of the high price of this kind of garment, it demands practitioner to have relevant knowledge, not only to estimate accurately the value, but also the maintenance and mending skills. Particularly, the garment made of nature fur and leather has slower changes than fashion’s, whose valuation come from itself material quality, accordingly, to maintaining and mending to production will keep the value of garment.

Integrated Classifying

Production Categories

Professional recycling depends on the garment categories will benefit to build the channel of recycling and selling professionally and maximize the profit of productions. For example, the second-hand jacket of Harley Davidson to Japan, the tie to Vietnam, the raincoat to London, the cotton T-shirt to Uganda, the pajama to Belize, the shoes to Haiti, while the jeans to the world. Omotesando is not only the direction indicator of Tokyo fashion trend, but also the center of global second-hand jeans, where you can find different eras copy of Levi’s, even you can find the jeans of Diamond rank. T-shirt is still popular in young generation as a carrier of wearer personality because of its unique design, even though the simple style and lower quality of materials, especially, the memorable T-shirt still has high volume of business. The suit has been the necessary for formal occasion of job interview, working, etc. because of the classic and strong practicability which is the most popular assortment of second-hand garments.
Dress for Success is one of public welfare institutes all over the Northern America which provides second-hand suits for job candidates professionally.

**Overstock Commodities**

It points to the overstock garments and the balance cargo in industries and wholesalers. These goods occupy the limited resource of industries and strictly effect the development of new production and marketing. As a result, the effective treatment to overstock commodities has been a prominent issue of every industries facing to, different industries will adopt different solutions based on itself characteristic of brand. Some of brand will discount in a brief period or sale in pointed shop of brand discounted. Some average brands usually contact the professional managers of second-hand recycling to transfer the overstock goods into secondary market through the middleman. To protect the image of brand, normally they will retreat for the package and label. Owing to the complexity, the balance cargo has pretty difference in treatment, price and marketing among different companies and brands, there is also existing of professional market in China big cities.

**Special Field**

Including variety uniforms, such as military, armed police, police, customs and bank employee. The government and relevant department actively promote the research of waste uniforms in special field for protecting the social stability and security property of people in case that the uniform flow into communities and improve their value further. Military supplies research institute of the PLA General Logistics Department has cooperated closely with Zhejiang Zhuji Furun Renewable Resources Co. They signed the agreement of research of waste military uniform recycling and make the results of research into stage of industrialization which marks the recycling work of waste garment in specific area more wider and deeper.

**The Others**

The categories include students uniform, military training clothing, patients clothing as well as performance costume of industries. These garments have their own feature and have limit in occasion, time. They are the important part of city waste garments and have some certain research value even though belonging to the small mass. There are over 140 universities only in Beijing, Shanghai, Wuhan three cities, where there is large quantity of military training garments every year. The disposable phenomenon of military training clothing has been existed all the time and had some dispute. Normally, after finishing of military training, the uniform has been put into wardrobe and never used again. The same problem still exists in some performance costumes in various industries and public institutions. Therefore, using successful experience of other industries lease market for reference develop relevant renting business based on the production feature to improve the utilization of clothing.

**Summary**

Sorting, recycling, reusing are the main three links of the waste regeneration. They are respective individual, not only having their own research approach and scope, but also close link together to form the relationship of upstream and downstream. Garment categories are various and complicated, so the scientific and reasonable classifying will benefit the best usage of clothing and develop the valuation of every waste clothing. The second, scientific classifying can improve effectively the efficiency of back-end work to reduce the pressure of recycling. The last but not the least, scientific classifying of waste clothing will promote the national quality and cultivate the social moral and responsibility awareness.

**Acknowledgement**

This research was financially supported by the Ministry of Education Foundation (11YJA760074) and Hubei Ministry of Education (2012303).
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