AALBORG UNIVERSITY
STUDENT REPORT

A Practice-Based View of Material Recirculation

A case study of discarded textiles centred in the 2nd hand shop Blå Kors Genbrug

Zahara Pérez Arribas
Supervisor: Rikke Dorothea Huulgaard
Department of Development & Planning
MSc Environmental Management & Sustainability Science
Semester 4
Study period: February 2017 – June 2017

`Study what interests you and is of value to you, study in the different ways in which you deem appropriate, and use the results in ways that can bring about positive consequences within your value system´

Tashakkori & Teddlie, 1998

Acknowledgements

I want to thank my research supervisor for being always willing and ready to help with valuable assistance and endless patience. Rikke Dorothea always encouraged and advised me through her continuous mentoring till the very last minute of the thesis deadline. In every way, she is an example to supervisors all over the world.

Though I am really thankful for all the input I received from all the interviewees who made possible this small research, my special acknowledgement goes to Kaj Pihl, for his inputs and insightful discussions which were an eye-opener for me in this field of textile material recirculation, especially at the beginning of this research. I would once again like to express my gratitude to him, for bothering to travel all the way to Aalborg for the long interview in order to make sure I would gain all the information I needed for my research, thank you very much.

I also wish to thank Mia Møgelgaard for her prompt reply and interest to help sharing insights, data and experience on behalf of a big company. My gratitude goes as well to David Palm, for finding the time to participate in this research and collaborate sharing thoughts and expert knowledge. I would also like to acknowledge David Watson for his quick replies to all my emails and questions. He also provided me with guidance through direct share and suggestions to articles, much appreciated. Invaluable information was gained as well from Nynne Nørup who despite of being immersed in a busy schedule she was always willing to give me a hand with anything I may struggled with. Another expert who found the time for this thesis was Nikola Kiørboe who contributed to the knowledge to complete this master research study.

Expert knowledge from the interviewees will help addressing some issues (with certain types of textiles) at Blå Kors Genbrug which are not stated in this report but will be tried to be voluntarily tackled in the future.

The last acknowledgment is to Blå Kors Genbrug, especially to Henrik Kristensen. I would like to give sincere gratitude to give me the chance to apply my studies into my volunteering work at the shop. I highly appreciate having been taken into consideration when I had proposals and suggestions for organizational improvement.

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Abstract

The purpose of this paper is to find ways of tackling the leakages of Material Recirculation in second-hand markets. At present, most of the collected used textiles by charities are sent to large wholesalers. This situation makes difficult to track these textiles which get mixed with others from all over the world. Therefore, the fate of the textile cannot be totally known. In connection to this problem, the research aims to identify convenient solutions to assure and enhance the recovery of the discarded collected textiles using one of the biggest second-hand shops in Denmark as main unit of analysis; Aalborg Blå Kors Genbrug. The focus of the study is on textiles which cannot be sold at Aalborg Blå Kors Genbrug and are relegated to either exportation or general garbage.

The originality of this study is the Practice-Based view approach which has been applied for the first time on the activity of textile reuse. The main intention for selecting this approach is to provide another analysis framework which attempts to understand the practice from a different angle. Also, the fact that the primary data was collected as part of an Action research, by being inside the shop Blå Kors Genbrug conducting the sorting of textiles like every other volunteer, gives value to this paper.

The main findings showed that putting the legislation barriers aside, organizations can make a difference in the way textiles are handled. Throughout a better collaborative approach among the textile recirculation activity systems, it is possible to make small steps towards a higher control of the fate of discarded-textiles. This ultimately will enable the best available resource recovery route for the cast-off items depending of the quality and condition they present. If second hand markets

embark on the collaborative strategies presented here, they will not be just improving their environmental performance of their business but it will also increase their competitiveness and public image as well.

Keywords – Textile, Recirculation, Collaborative Practice, Activity System, Second-hand market.

Acronyms

ETP European Technology Platform

NTRRC Nordic Textile Reuse and Recycling Commitment

WRAP The Waste and Resources Action Program

1. Introduction

1.1 The necessity of enhancing textile material recirculation practices

The extent to which garments are disposed, on a yearly basis, within the European Union boundaries is as scary as the image of 5.500 Olympic swimming pools filled with pieces of clothes (Reuse and Recycling EU Social Enterprises network , 2016). In addition, more than 4.2 million tons of discarded fabrics are traded in the world in a time lapse of just a year (WRAP, 2016).

In Denmark, 89.000 tons of textiles are consumed every year in the Danish households;16 kg per Dane per year. Of these textiles about 39.000 tons are collected (44% of household textiles) through charities and private organizations and the rest is discarded (Innovationsnetværk for Miljøteknologi , 2013). This highlights the fact that charities are at the moment the main collectors of end-of-use garments not only in Denmark but also in the rest of the Nordic nations (Palm, et al., 2015) and (Klepp, et al., 2015). Nonetheless, along with the charities, there are a number of shady or uncertified players handling discarded textiles (Palm & Elander, 2015). The reason for the existence of the illegitimate actors may derive in a certain way from the loose regulation concerning collection, sorting, reuse and recycling of textiles in Nordic countries and rest of Europe (Palm & Elander, 2015). The presence of illegal actors generates stigma and skepticism among some individuals in regards to the practices of textile reuse which can difficulty the future development of the collection, reusing and recycling of these cast-off textiles (Palm & Elander, 2015). Supplemented to this, misinformation regarding second hand retailers activities also gets on the way of spreading out their full potential concerning textile reusing (Han, 2013). The misinformation is a result of the lack of knowledge citizens have about the exported second-hand textile flow (Tojo, et al., 2012). This is relevant since more than half of the textile products collected by second-hand actors are exported (Tojo, et al., 2012). Some sources state that in the Nordic countries the amount of collected textiles is around 90% (Schmidt, et al., 2016). The destinations generally are outside the European Union (Africa, Asia…) and Eastern Europe (Schmidt, et al., 2016) and (Watson, et al., 2015). Meanwhile, what happens to these products after its first destination is not well known (Tojo, et al., 2012). Thus, there is a risk of these textiles being processed in an inadequate and unsafe environment or directly landfilled (Watson, et al., 2015).

The main reason for this is that "*there are no national coordination and/or channeling of textile flows*" (Palm, et al., 2015).
Furthermore, although International trading of discarded textiles facilitate new opportunities of raw material sources (Joint Research Centre and Technical Reports, 2009) some complications arise when there is no evidence of "*standards or guidelines for quality/processing of secondary materials (...) or primary materials(products where it can be proven that they are used on secondary materials*" (Joint Research Centre and Technical Reports, 2009) and (CLIMATE-KIC, 2017).

All the aforementioned points show the necessity of urgent actions at all levels of textile product recirculation organizations and actors so the textile waste can be reduced as much as possible.

1.2 Closing materials ´loop

The linear economy model (take-make-dispose) generally followed by our current society has a prominent low resource use efficiency (CLIMATE-KIC, 2017). At present day, with the growing pressure over lacking of certain resources (CLIMATE-KIC, 2017), it becomes more important to reconceive the material and product streams (Mompó, 2015). This is crux in the Circular Economy Model (see figure 1) which is *"one that is restorative and regenerative by design, and which aims to keep products, components and materials at their highest utility and value at all times"* (Ellen MacArthur Foundation, 2014).

When following the steps of a truly Circular Economy, closing the material loops, (see figure 1) stands as the most desirable goal in any industrial or organization system (Ellen MacArthur Foundation, 2014). Aiming to accomplish Zero Waste Systems is the cornerstone in every closed-loop approach (CLIMATE-KIC, 2017) as it is acknowledged that the waste linked to a single-use economy should be eradicated (Ellen MacArthur Foundation, 2014).

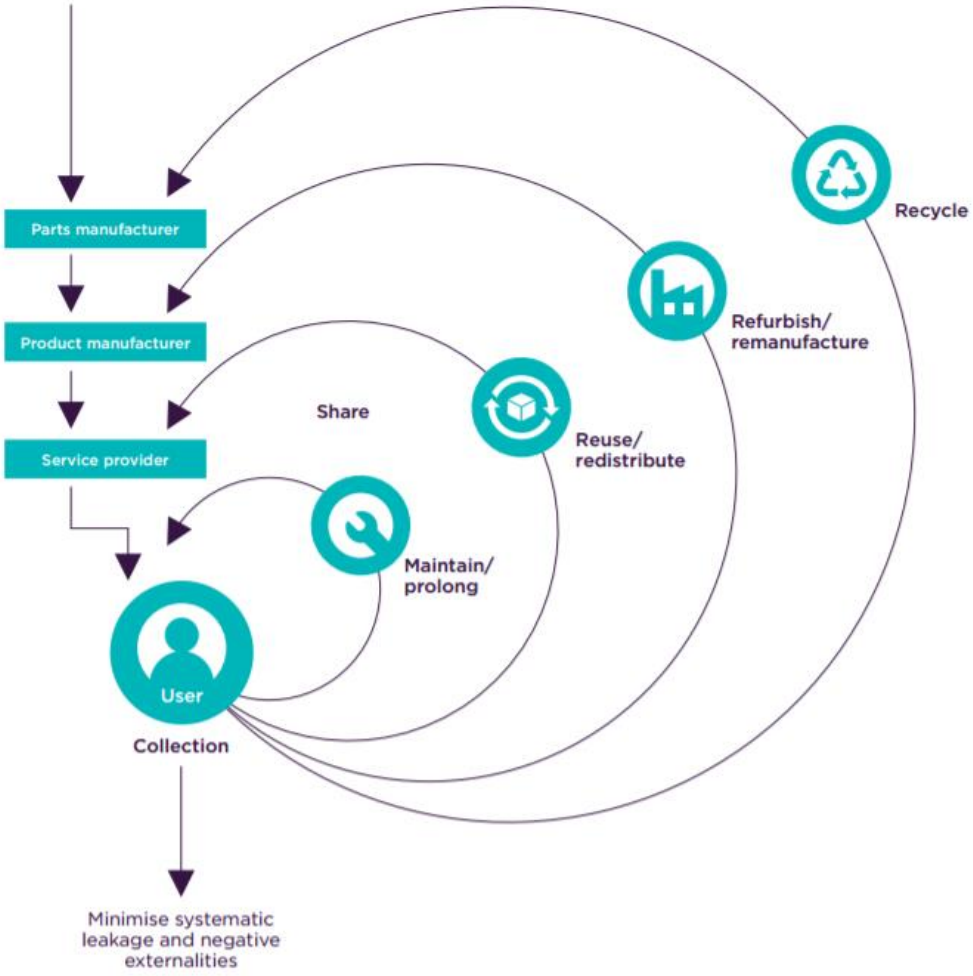

Figure 1:Circular System Diagram (Ellen MacArthur Foundation, 2014)

Furthermore, the major benefit of this model comes only with a share of assets and efforts with numerous and diverse actors along the processes of any value chain (Mompó, 2015). However, closing the loop with different actors entails addressing product flows leakages globally, since there is a dispersion in materials and suppliers worldwide (Ellen MacArthur Foundation, 2014). In other words, there can be many different types of material loops when it comes to shifting from a linear to a Circular Economy (Ellen MacArthur Foundation, 2014). Depending on whether a supply chain is located primarily at a local scale or not, the loops can have different degrees of lost materials, energy, products, etc. which cannot be re-introduced in the system by for example, recycling them (Ellen MacArthur Foundation, 2014). *Figure 2* shows four examples of material supply chain loops with differences in regards to leakages spots and, as a result, differences in potential solution necessities to close the loop (Ellen MacArthur Foundation, 2014). According to

Ellen MacArthur Foundation (2014, p. 21); "*These archetypes can later be used to provide a search and prioritization approach for identifying how to turn these leakage points into circular arbitrage opportunities".*

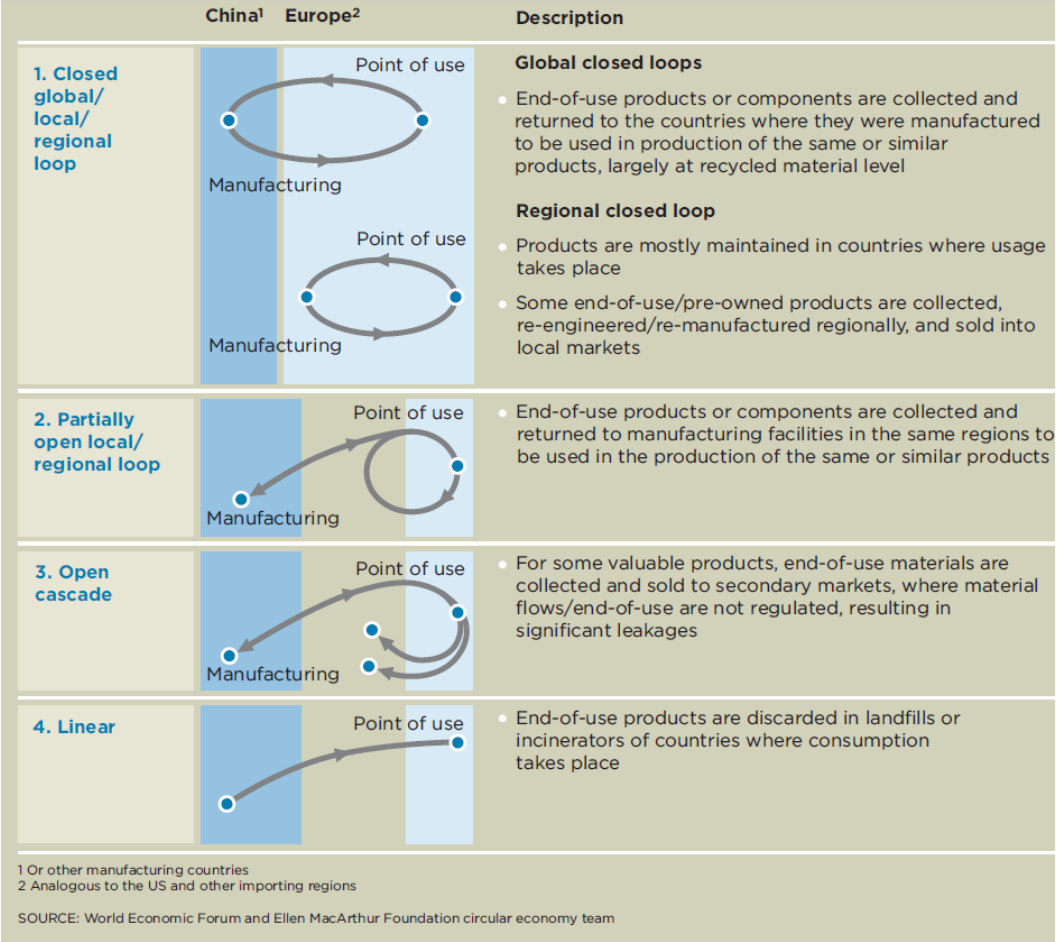

Figure 2: Archetypes of supply chains and loops (Ellen MacArthur Foundation, 2014)

Within the European textile and clothing industry, the Circular Economy is continuously being embraced as a guideline for different purposes; sustainable production and product development as well as a way of boosting the expansion of sustainable fibers (ETP Fibres Textiles Clothing , 2016). Nonetheless, there is still a long way to go for entering completely in a circular production and consumption model (ETP Fibres Textiles Clothing , 2016). In connection to this, fostering the cooperation among all the interested parties (producers, retailers and waste processors) is crucial when following a circular path (ETP Fibres Textiles Clothing , 2016).

However, *"European legislative framework is not (yet) favorable for circular systems, although the circular economy roadmap of the EU might trigger changes with respect to green procurement*

and legislation (product liability). The use of recycled textile materials can be promoted by these changes" (ETP Fibres Textiles Clothing , 2016).

1.3 Aim of the research

This research project is committed to find leakages present in the recirculation of textiles, at a second-hand shop level, by combining an action research and a theoretical framework based on theories of practice. With this approach, the research aims to shed some light on the ways the practice of textile reuse is carried out. Mapping what are the problems or hurdles faced by second-hand-markets when it comes to collection, sorting and recirculation of textiles (reuse, recycling) in collaboration with other practices is aimed too. The project ultimately intends to offer a new framework for analysis which would serve as a backbone to enhance the practice of recovery of discarded collected textiles.

2. Background information

2.1 Textile Material Recirculation

2.1.1 Open and Closed Material Loops for end-of-life textiles

The definition of textile encompasses the materials which are formed by a high percentage of fibers (Joint Research Centre and Technical Reports, 2009). They can be classified as apparel, home textiles (tablecloths, carpets, curtains) and household textiles (shop towels, other cloths and bedspread) (Joint Research Centre and Technical Reports, 2009). The garments are basically (67-68%) cotton and chemical yarns (27-28%) while the home and household textiles are constituted by chemical fibers mostly (polypropylene and polyamide) which allow recycling (Joint Research Centre and Technical Reports, 2009).

The constant and acute production rhythm of these materials triggers, each year, an accumulation of piles of cast-off textiles (Joint Research Centre and Technical Reports, 2009). This comes with environmental and economic burdens that could be avoided by making the best use of the available textile recovery opportunities (Joint Research Centre and Technical Reports, 2009). According to (Tojo, et al., 2012) the prevention of textile waste is deemed to cause; "*the most significant climate impact per ton of prevented waste"* when compared to other waste flows. "*Current levels of re-use of clothing avoid 6.9 million tonnes CO2-eq per year*" (WRAP, 2016). Put differently, 1 tonne of clothing put for reuse by for instance a charity shop, gives around 11 tonnes CO2 –eq Green

House Gases saving (WRAP, 2016). Thus, it is clear that today´s most feasible way of recirculating separately collected fabrics is through resales for further reuse by different actors (Schmidt, et al., 2016 and WRAP, 2016). However, when this is not possible the recycling is another option which has several end markets, most of them "open loop" (WRAP, 2016). Plus, despite the present differences between recycling and reuse capacities, processing textiles is vital in the reuse and recycling chain of textiles (WRAP, 2016).

In this context, *closed material loops* are those markets where the end-of-life textile is processed in order to get raw materials which will serve to produce textiles with the same purpose as the original and usually within the same industry (I:Collect, 2016). This practice is also known as *textile-to-textile recycling* and is not extensively developed given a lack of advanced technology able to separate fibers and obtain optimal fabric quality (Schmidt, et al., 2016). The possible presence of dyes in textiles adds on the technical issues (WRAP, 2016). Besides, there is some skepticism surrounding the marketable feasibility of scaling up this type of recycling (WRAP, 2016). For the moment, the recycling of 100% polyester is the only process that has achieved the necessary technology for carrying out textile-to-textile recovering (Schmidt, et al., 2016). Teijin's chemical recycling plant is an example of it (WRAP, 2016). However, this is not the case for fiber mixes and cotton (Schmidt, et al., 2016).

According to some experts in the field of textile product recirculation, since the market for used textiles is going down, some processing enterprises are lacking incentives to continue collecting textiles at the same or a higher rhythm (WRAP, 2016). The result gets the form of cast-off textiles which do not enter any recirculation route, being relegated to the garbage (WRAP, 2016). On a similar note, there is the case of charities gathering textiles that cannot be sold at the facilities of the charity and are also discarded as general waste (WRAP, 2016). Overall, there is a necessity of; *"More viable end markets, in particular around fibre-to-fibre recycling in the long run, would increase the attractiveness of currently unattractive grades of used textiles"* (WRAP, 2016, p. 14).

In the case of *Opened material loops* (see *figure 3*) the textiles are processed with the intention of using the material in other industries rather than in the same where they came from. This type of processing usually delivers textiles with an obvious lower quality degree in comparison with the originals, this is known by *down-cycling* (Tojo, et al., 2012), see *figure 3*.

Nowadays the non-reusable fabrics are bound to be down-cycled or incinerated (Schmidt, et al., 2016).

Down-cycled fabrics in Europe are normally destined to industries such as automotive, flocking (shredded fabrics for stuffing), carpet and furniture (WRAP, 2016). These fabrics are used in many ways but the most common ones are; mattresses filling (stuffing), insulation materials and industrial rags or wipes (Schmidt, et al., 2016 and Tojo, et al., 2012). Nonetheless, that is not it as there are plenty other ways of applying mechanical recycled fibers. These fabrics especially recycled cotton, are present mixed up with other materials in objects such as door panels and floor coverings acting mostly as insulation of both kinds (acoustic and thermal) (Schmidt, et al., 2016). *"Sorting by type of material and potentially colour sorting, shredding and potentially re-spinning (yard or thread)"* constitute the processes involved in the mechanical recycling (Palm, et al., 2015). Mechanical recycling is often associated with downcycling and is the most common way of recycling textiles in Europe (Palm, et al., 2015). It exists in the Nordic countries but in a very and almost negligible amount (Tojo, et al., 2012). This is because downcycling is not a profitable business at the moment (Schmidt, et al., 2016). Moreover, some of the down-cycled textiles trading industries are facing lack of demand for their materials (WRAP, 2016). This is the case of the wipers market which also confronts stronger competitors such as substitute products (cloths made by paper or materials other than textiles) (WRAP, 2016). In addition to this, LCAs studies show that the environmental positive impacts are not that high given the conditions of the fabrics aimed to be substituted (Schmidt, et al., 2016). However, downcycling is applied by mechanical recycling as synthetic fibres can also be down-cycled by chemical processes with use as upholstery in the cars (Palm, et al., 2015). *Chemical recycling is used for synthetic fibres (polyester, nylon etc.), mixed fibre (synthetic and natural) or cellulose fibers* (Schmidt, et al., 2016 and Palm, et al., 2015). The obtained fibre conditions is believed to be more consistent than in the case of mechanical processing. (Schmidt, et al., 2016).

In both categories, mechanical and chemical recycling, the actors involved can be either just producers of raw materials or also, producer of new objects from the recovered products (Palm, et al., 2015).

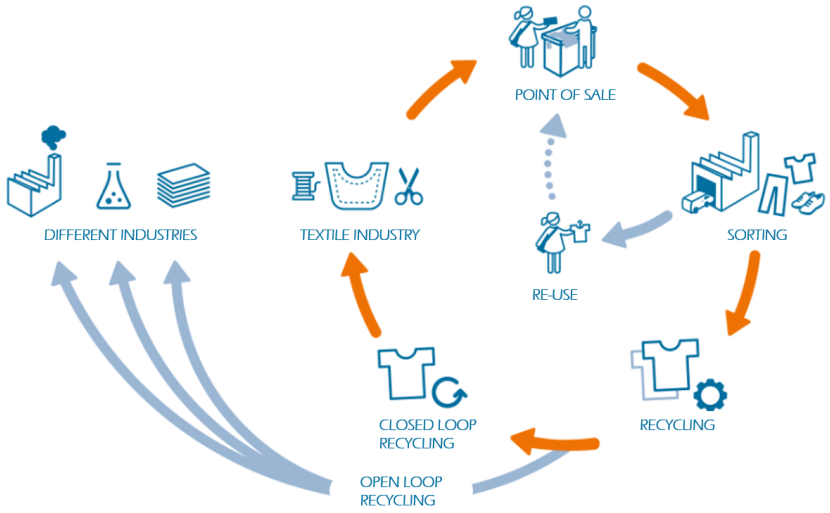

Figure 3: Circular Economy for the Textile Industry (I:Collect, 2016)

2.2 Blå Kors Genbrug

Blå Kors Genbrug belongs to the charity Blå Kors and exists as a second-hand shop since 1975 in Denmark. Nowadays, there are 60 more shops distributed around the country. The main purpose of this second-hand shop is to generate economic profit for the different causes the organization supports. The operating system of Blå Kors Genbrug is a charity-affiliated for-profit thrift shop in which the goods that are sold at the shop are obtained from individuals.

One of the biggest Blå Kors Genbrug is in Skalborg (Aalborg). It collects furniture, textiles, accessories (jewelry), kitchen utensils, electrical appliances, books and toys. Each sector has different organizational procedures.

The main methods the organization uses of selling clothes is: on site (at the physical shops), online. Therefore, we are talking about a mainly traditional second-hand retail trade where the shops are formally operated by volunteers.

Blå Kors Genbrug has what is known as “bring-in” systems as the organization has containers for used textiles available for public use in the proximities of the second-hand shops. The charity has also separate collection systems; street collection and collection from containers. When the containers empty sorted clothes, the best goes on sale in the store. Moreover, there are two sections for discarded textile items that are deemed not to be good enough for sale in the shop; one for export and the other one for waste. Every Thursday both sections are cleared out by a Blå Kors truck. The exportation is till Horsens and from there, they send between 9 and 10 loads a year of approximately 1,4000 tones to a collector in Zele (Belgium) which sorts it and sells it for example

to Africa, Pakistan, Ukraine and many other countries. This collector it is not a second-hand shop but a big business that imports large quantities (Kristensen, 2017).

Blå Kors Genbrug has at the moment two different types of supply chain setup; *linear* and *open cascade* (see figure 2). If the attention lies on the amount of discarded textiles the shop collects in Denmark and, due to its conditions, is sent to incineration in the same country, then the pattern followed is linear (see figure 2). However, Blå Kors Genbrug has shops in Denmark where the textiles are collected and sorted to get the best quality. And, as Schmidt reports; "*Typically between 10 and 30% of sorted textiles are suitable for domestic resale"* (Schmidt, et al., 2016, p. 22) leaving an important volume to be exported abroad. In this case, material flows are not accurately regulated, thus there can be significant loss of textile products, the so-called leakages (see figure 2).

2.3 The Nordic Textile Reuse and Recycling Commitment

The Nordic Textile Commitment is a voluntary certification system for used textiles aimed at Nordic actors within collection and sorting of discarded textiles. The overall aim is to double the collected amounts of used textiles, and to strive towards a ten-year goal of at least 50 percent of collected textiles are reused or where reuse is not possible, recycled (Kiørboe, 2017).

The objective is to try to attract stakeholders to take part of the commitment as a way of reducing their environmental performance in regards to textile recirculation activities in the Nordic countries. "The main principles of the Voluntary commitment have been developed together with a Code of Conduct that combined cover details for collectors, sorters, reuse traders, recyclers, municipalities, waste companies and producers/importers of textile" (Palm & Elander, 2015).

The project was promoted by the Nordic Prime ministers' initiative, The Nordic Region leading in green growth (Palm & Elander, 2015).

3. Theoretical framework

3.1 Theories of practice

The concept of practice is projected under multiple understandings in diverse literature. Generally, the notion of practice is understood as a form of conduct which follows a certain routine (Marcos-Cuevas, et al., 2016). In essence, a practice entails sets of well-known understandings, activities or procedures, and an integration of objects and their respective use (Marcos-Cuevas, et al., 2016)

(Warde, 2005). These sets control the behavior that actors (with concrete capabilities) have within the practice (Warde, 2005).

The theories which study the world surrounding practices are gathered under the term "*Theories of Practice*" (Warde, 2005).

According to Alan Warde (2005) the broad scope of the *Theories of Practice* pays attention mostly to processes such as *tradition, routine, habituation, tacit knowledge, and practical perceptions* present within the practice. This denotes an analysis centered in the practice and not in the practitioner as such. "*Practice come first, because it is only once we appreciate the set of practices involved in a scene of action that we can ask what sort of agency and actor-ship is made possible by specific conditions*" (Nicolini, 2009, p. 7).

Thus, from a practice-based approach, it is possible to understand and explain organizational phenomena not by solely putting the emphasis on what people do but how they do it and with what means. The sense-making and materials that mediate and coordinate the practice are foregrounded and explored by the Theories of Practice (Nicolini, 2009).

Finally, these theories contemplate the world as a "*network of practices"* and aim to depict how are they interconnected and performed (Nicolini, 2009, p. 8). Thus, in pursuance of comprehending different organizational or social singularities is necessary to look at the bigger picture of collective (not individual) human comportment and activity. More explicitly, paying attention to the collective work in a practice, helps understanding what is behind the coherence of specific actions and operations that are generated by an activity. Hence, every practice entails certain configuration of *collaborative human practice* (Nicolini, 2009, p. 109). These theories revolve around these configurations but not in a unified way, as at the moment, an integrated theory of practice does not exist (Nicolini, 2009).

3.1.1 Activity Theory for practice analysis

Activity Theory does not stand as just one type of theory of practice, on the contrary it covers a wide array of approaches. One of them is known for its applicability in theorizing practice, its name is *Cultural and Historical Activity System* (CHAT).

For example, companies and other organizations can be considered as a group of socio-material practices which are originated as a result of their active reproduction (Marcos-Cuevas, et al., 2016).

Therefore, as a point of departure, CHAT can serve as the first pillar on top of which a whole framework for theorizing can be built around practices (Nicolini, 2009).

Within this context, activity and practice act as synonyms.

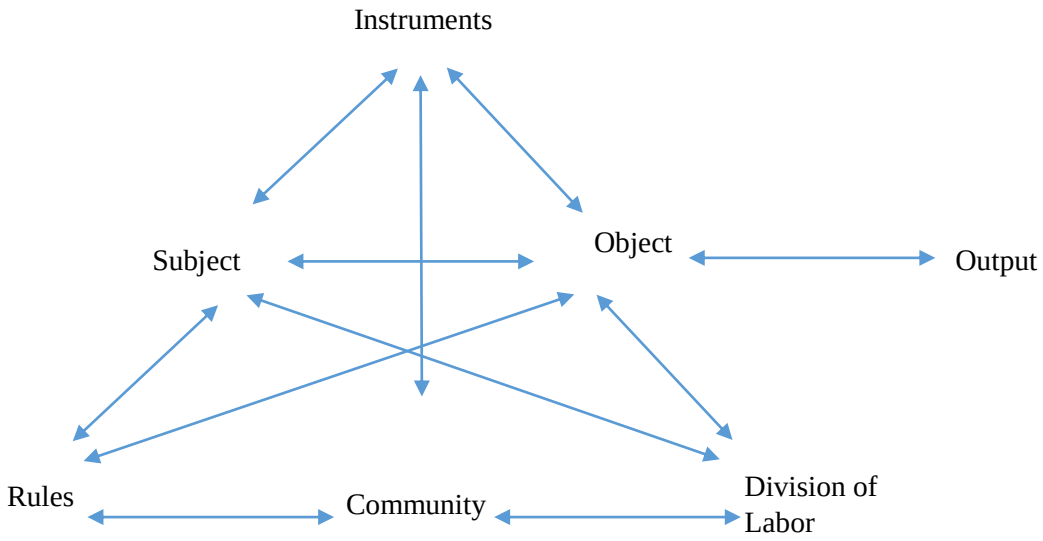

Figure 4: Elements of the Activity System (Nicolini, 2009).

The use of the term "*Activity System*" as the basic unit of analysis of CHAT occurred to scholars of this theory in the twentieth century. Being the Activity System a bundle of activities and social practices interrelated and interdependent of each other and mediated in different ways (e.g. rules). According to Engeström; "*the first principle of Activity Theory is that a collective, artefact-mediated and object-orientated activity system, seen in its network relations to other activity systems, is taken as the prime unit of analysis*" (Engeström, 2001, p. 136).

Moreover, an Activity System is formed by a community originated from a historical evolution; *"What happens now can only be fully understood against its own history"* (Kerosuo & Engeström, 2007, p. 37).

Figure 4 shows the elements which constitute an Activity System and upon which contradictions can be mapped.

If an Activity System shows problems, this implies the existence of contradictions, though they are not the same. These contradictions, which can be observed in form of events, behaviors and actions, are the heart of every Activity System. These contradictions are the reason why Activity

Systems do not remain static and evolve during time. We can say every Activity System thrives on these structural tensions which arise from different areas of the Activity System (Kerosuo & Engeström, 2007). The main types of contradictions suggested by *Engeström* (Engeström, 2001) and backed up by Nicolini (Nicolini, 2009)are the following (also see figure 4).

a) Contradictions within the object (Nicolini, 2009).
b) Between elements (e.g between the object and the rules) (Nicolini, 2009).
c) Between different activity systems (Kerosuo & Engeström, 2007, p. 37)

The identification of contradictions and the production of expansion are not just merely analytical tools: they also constitute the opportunity and starting point for intervening" (Nicolini, 2009, p. 115)

Concerning the denominated *zooming in* and *zooming out* terms, these are just methods suggested by the author Nicolini to undertand and represent practice more accurately. Zooming suggests that the understanding and description of a practice should allocate the various associations that interact in larger grids with each other, as the most suitable way of studying practices (Nicolini, 2009). "*Practices are better described in terms of a practice-network"* (Nicolini, 2009, p. 1409).
Nonetheless, it should be bore in mind that each practice holds particular internal interests which may clash with one and another due to the differences between them (Nicolini, 2009). Thus, it is important to highlight the interconnection present among practices (Nicolini, 2009) meaning that the outcomes of one practice happen to be valuable for others (Marcos-Cuevas, et al., 2016). This has special interest in a "material practice" in which the practice´s existence arise from an object or desirable materialistic outcome that drives and coordinates all or most of the activities (and tools to be used) embedded in the practice in question (Nicolini, 2009). This object, is as well "*the result of the interests of the community that gathers around it plus other interests mediated in the activity through a variety of other intermediaries*" (Nicolini, 2009).

Furthermore, aspects such as the patterns of associations or *local culture of action* as well as the *way sense and object of the practice (learning)* of the object of practice takes places are factors that can determine the *durability of the practice* (Nicolini, 2009).

4. Research approach

4.1 Research questions

The main research question is formulated as follows; *How can a Collaborative Textile Recirculation practice be represented and further developed?*

In order to answer the question is necessary to find out;

1. Who are the actors and how are they positioned in the Activity Systems of textile re-use and recycling in which they are engaged?

2. What are the contradictions faced by the textile recirculation Activity Systems due to the interaction between them?

3. What is required by the identified actors to facilitate the expansion of the practice of collaborative textile recirculation?

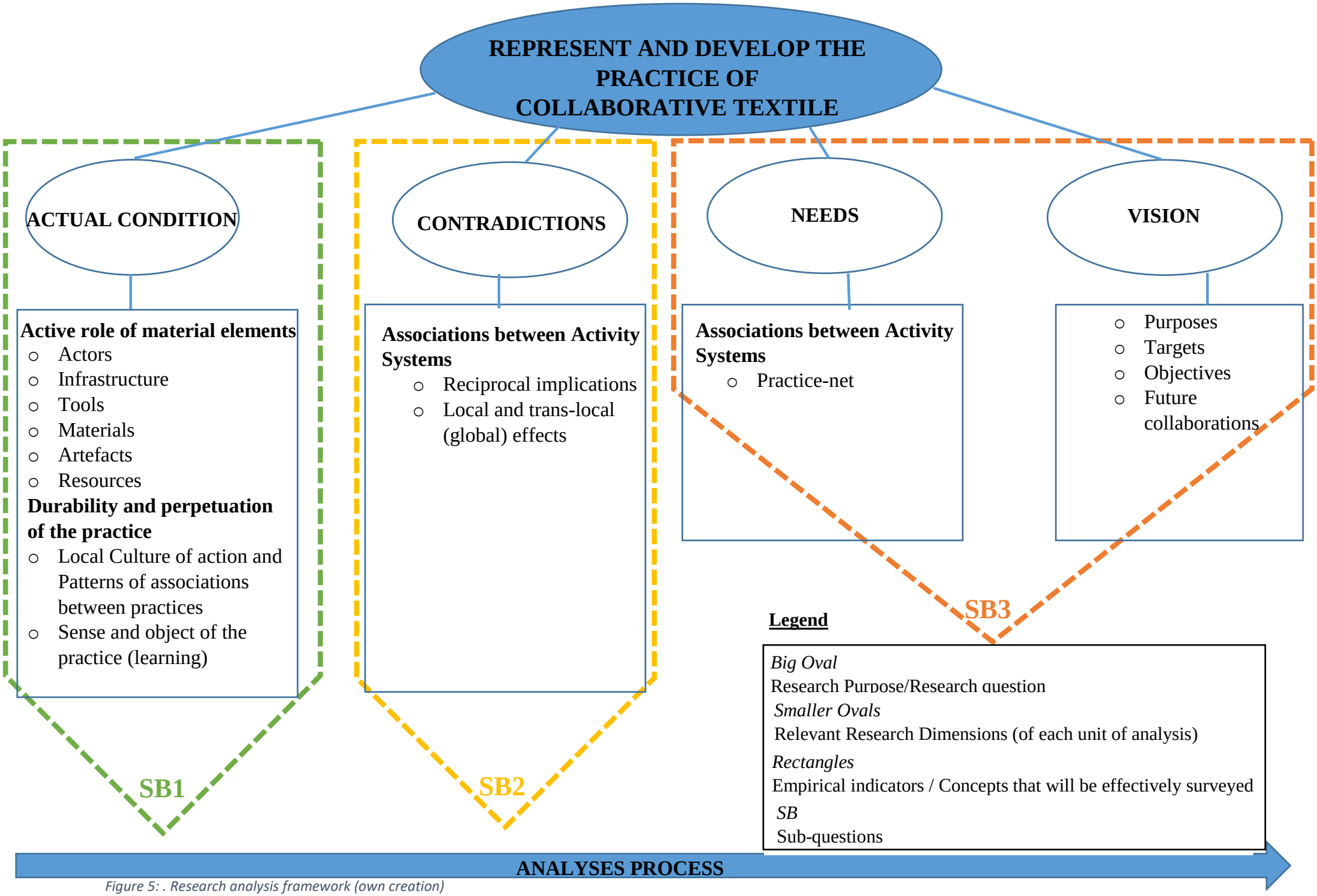

Figure 5: . Research analysis framework (own creation)

The project ultimately attempts to draw a framework which would serve as a backbone to enhance the recovery of discarded textiles. This could be possible through a better collaboration of actors involved in the diverse practices within textile recirculation.

4.2 Case study scope

This project has as main collaborator the charity Blå Kors. More concretely one of the charity´s biggest second hand shops in Denmark (Blå Kors Genbrug, Aalborg).
This section, intends to show how this collaboration has been used throughout the study.

Blå Kors Genbrug is essential for the conduction of the research serving as an observing and action platform for part of this study. The organization is chosen for the research project for a number of reasons. Firstly, given the potential Blå Kors Genbrug holds for an improvement in their environmental performance related to the activities of textile recirculation. Even though the actual condition of the shop in question lacks of environmental approaches (mainly due to their relatively short existence as second-hand business) the organization is open to a change in this regard.

The collaboration is built upon an informal agreement of voluntary work at the shop. This way, it is easier to get immerse in the practice of textile´s reuse. Having a closer look at the activities which are daily performed by Blå Kors Genbrug´ volunteers, facilitates the understanding and representation of the practice of reuse of textiles. In this case, from the angle of a for-profit charity ran by volunteers.

Selecting Blå Kors Genbrug as a key actor in this study serves as well as an eye opener for the extent to which these kind of charities contribute to closing textile loops. Furthermore, observing textile reusing organization patterns of Blå Kors Genbrug may allow to pinpoint the problems organizations like this face on a daily basis. The scope of this project is also centered in discovering some hurdles that may impede forthcoming improvements in the textile reuse practice with the involvement of charities. Some of these problems can be connected to internal management as well as some others which can arose from the relationships with other actors of the textile flow chain. Both types of problems are within the study limits of this project.

All the latter is vital when it comes to give suggestions for the development of a more collaborative textile recirculation practice.

4.3 Research design

This part seeks to justify the reasons that support the choice of data collection methods as well as other analysis instruments applied in this paper. Figure 5 offers in just a glance the outline of the research design. Moreover, in this section the plan on how the research questions will be answered is also provided.

4.3.1 Research philosophy

As suggested by some authors (Tashakkori & Teddlie, 1998), the philosophy of this research is not defined at the beginning of the study but considered during and throughout the whole research process. Put differently, there is no intention of clashing approaches but rather combine them. That is the research process in question follows a *pragmatic* position given that the different research questions can be answered by working with distinctive approaches.

The departure point of this study is to recognise that what is being analysed is a unique case. There might be similar settings, but the conditions under which the analysis is taking place are not possible to be reproduced with the same level of detail in any other case scenario. Otherwise stated, the set of actors within the organisation of Blå Kors Genbrug, the display of material elements, as well as the identity of other organizations involved with it are governed by circumstances that may differ in other situations. This is the stance of *interpretivism* (Saunders, et al., 2007). For that reason, the research questions are mainly answered from an *interpretivist* point of view. Moreover, this epistemological position gives a high relevancy to the study of social actors which is also the case in this paper.

Following the line of interpretivism, the degree to which generalisation is used in this study is not high. The findings related to the research questions may apply to this one-time situation but may not in other scenarios. However, it is believed that the findings of this paper may serve as an inspiration to other similar small charities to Blå Kors Genbrug which lack of environmental performance tasks or targets and are run by unpaid workers.

4.3.2 Research approach

The approach of the project is *abductive* as it has some traits from *deductive* and *inductive* studies. This study has *deductive* aspects as the theories have been chosen prior the gathering of data for the research (Saunders, et al., 2007). Consequently, the development of a theoretical framework

was based on testing the collected data. However, there is no hypothesis in play in this research project. On the same lines, this piece of research shares a wide range of characteristics which correspond to an *inductive* study. These are basically the collection of qualitative data and a flexible research framework that adaps throughout the advancement of the project.

When it comes to the analysis of social aspects of the theory applied in this paper, a *regulatory* conceptual dimension is here followed. This perspective seeks to analyse and describe in a non-excessive judgemental manner, the way an organisation (of any kind) deals with different matters (Saunders, et al., 2007). For instance, the suggestions for improvements that can be read in the findings chapter are made within the organisational limits or framework Blå Kors Genbrug holds at the moment of the research. This regulatory perspective usually works with two research paradigms; interpretive and functionalist (Saunders, et al., 2007). The research operates within an *interpretive paradigm* due to the activities of the project are centered in studying the organisational life in different practices and organisations; textiles collection and recycling. According to Saunders (2007, p. 113); "*the main concern of this paradigm is (…) to understand and explain what is going on*". The latter connects with the overall *exploratory* nature of the research, given its purpose of discovering "*what is happening; to seek new insights; to ask questions and to assess phenomena in a new light*" (Robson, 2002, p. 59).

4.3.3 Research strategies

This thesis has two research strategies; *case study* and *action research*.

Robson (2002, p. 178) defines a *case study* as "*a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence*". This is exactly the situation of this research where the phenomenon of textile material recirculation is being looked into under the light of today´s state of affairs. For the conduction of this investigation, the research carries out a literature review and a number of interviews with experts on the analyzed subjects which constitute typical ways of conducting *exploratory* research (Saunders, et al., 2007). These methods will be further explained below in section 3.3.6 (*Techniques and procedures*).

However, since an important part of the research is about examining and synthesizing ideas of distinctive aspects of the practice of textile re-use and recycling, this study can also be seen as

descriptive to certain extent. This means that another object of the paper is "*to portray an accurate profile of persons, events or situations*" (Robson, 2002, p. 59).

More in depth, we are talking about this study constituting what is known as a *single case* (Saunders, et al., 2007). As briefly mentioned earlier, studying the practice of textile reuse from Blå Kors Genbrug´s current situation and available resources, is deemed to be a unique case. It is also a chance to observe and dig into a situation that not many other researchers have reflected on before.

Concerning the research strategy of *action research*, this project could be seen as a research about action because it "*relates to the involvement of practitioners in the research*" (Saunders, et al., 2007). The volunteers and employees of Blå Kors Genbrug are not only objects of study.

The findings connected to the practice of textile reuse of Blå Kors Genbrug result from the participation in the textile related tasks and also from the engagement with the members of Blå Kors Genbrug.

4.3.4 Methods choices

This research follows a *multi-method qualitative study* as all the data gathered is non-numerical and is analyzed with qualitative instruments.

4.3.5 Time horizons

The time horizons of the project fit in the category of cross-sectional. In other words, the research project provides with a "snap-shot" overview of the current situation of the phenomena of textile recirculation. It focuses on a short period of time compared to longitudinal studies (Saunders, et al., 2007).

4.3.6 Techniques and procedures

The data collection and data analysis strategies are stated below in Table 1. This table shows an overview of the methodology applied throughout the research. The structure of the framework is based and adapted from "Theories of practice" above mentioned (Section 3.1). These theories are called *substantive theories*, meaning that they are framed into a certain time lapse, research environment, groups of inidividuals or geographical location, and problem (Creswell, 2002). The

use of this kind of theories in a research contributes to a better understanding of the world around us (Saunders, et al., 2007).

The data analysis techniques applied in this research are divided in two according to the *dimensions* desired to be studied; *zooming in* on practice and *zooming out*. In this study, the technique of zooming in (further explained in section 3.1.2) seeks to approach the *actual condition* dimension in which the practice of textile reuse is carried out. The primary data has been collected from the field visits or, clearer said, direct involvement (shadowing) in the shop of Blå Kors Genbrug. Thanks to observation procedures and participation in the different activities embedded in the practice of textile reuse, the objects and other material elements used in the practice have been identified in this organization. Not only the identification of material tools has been done but also an analysis has been carried out in this regard in terms of what were these material tools intended to be use for by the practitioners of this shop. The results of this will contribute to understand to some extent, the current limits the performance of this practice faces, in organizations such as Blå Kors Genbrug.

Nonetheless, Blå Kors Genbrug has not been equally important to the study of the rest of *empirical indicators*. The local culture of action of Blå Kors Genbrug can be stated by the same instruments described earlier. However, when looking at optimal ways of developing the practice of reuse of textiles and guaranteeing its perpetuation, other data collection instruments have been selected. In order to be able to describe the particularities of the practice of textile reuse that prevent it from failing, it has been necessary to pay attention to the practice in different organizational contexts (though the focus of this thesis still is on second-hand shops owned by charities). For this purpose, literature review has helped gaining insight of how other charities perform. However, an in-depth interview has been carried out with one representative of a different charity working with discarded textiles on another level. Also, other experts in the matter have been contacted in order to provide professional views on the actual condition of the practice of textile reuse.

The following individuals have shared their viewpoints and expertise on the previously addressed issues:

- David Palm – Ramböll - Project manager in “The Nordic Textile Reuse and Recycling Commitment” (Hereafter NTRRC).

- David Watson – PlanMiljø - Project manager in NTRRC.
- Kaj Pihl – Representative of UFF-Humana in the pilot project NTRRC.
- Mia Møgelgaard –H&M Denmark - Sustainability Manager
- Nikola Kiørboe – Dakofa - Project manager in NTRRC.
- Nynne Nørup Industrial PhD student DTU Environment & Humana.

The output of the interviews has served as well to complement the introduction and background information sections. All the quotes and citations have been double checked with all the interviews prior using them in this report.

Complementary to these interviews, an important source of secondary data has been the one-year pilot project "The Nordic Textile Reuse and Recycling Commitment" in which some of the interviewees have had direct involvement either as participants or as project leaders.

The technique of zooming out has been applied to the analysis of the associations between the activity systems related to textile reuse which are basically the sorting at second-hand charities such as Blå Kors and neighbor Activity Systems (e.g commercial collectors). This examination has been done upon two different dimensions; contradictions and needs of these practices.
Engestrom model of an Activity System and his approach to contradictions within and among practices are used to untangle the conflicts that the activity system of textile reuse may encounter at a charity scale. Basically, the findings of the second sub-question attempt to show how further associations with other organizations in the field of textile material recirculation, may potentially affect the Activity Systems examined in this report. The aim of these potential collaborations (see Table 1) emerge from the findings presented in section 5.1.1. These associations are the ones that may serve to tackle textile reuse management gaps or poor environmental performance not only at Blå Kors Genbrug but between other neighbor Activity Systems or practices such as commercial collection and recycling of textiles and the local and translocal (global) effects of such associations. The contradiction´s analysis is supplemented by excerpts from interviews with outsider experts (see Table 1), literature reviews as well as minutes from the reference groups of the first pilot of Nordic Textile Reuse and Recycling Commitment. With this in mind the generalization is patent when addressing the findings of this research questions. In other words, the findings do not correspond just to one example of organization but they can be extended to similar ones which perform in the textile reuse practice.

Delving deeper into these two dimensions (contradictions and needs) aimed to find the vision towards which these practices should be guided to. In other words, once the problems or contradictions these two practices may face when it comes to relating and collaborating between them, and once the needs or requirements to engage in such interaction are discovered, then on these grounds is possible to answer the last sub-question. Ultimately, concrete actions or initiatives along with their requirements for helping in the expansion of the practice of Collaborative textile recirculation constitute the findings concerning the third sub-question. The possible positive effects of complying with such requirements are also sketched out.

			Actors and sources	Focus of the empirical indicator
METHODOLOGY				
Zooming in on the practice of textile reuse				
Dimensions	**Empirical indicator**	**Instruments**		
Actual conditions	Active role of material elements	Observation/Shadowing	○ Blå Kors Genbrug	○ Infrastructure ○ Tools ○ Materials ○ Artefacts ○ Resources
		Interviews	○ Kaj Pihl – UFF-Humana ○ Mia Møgelgaard –H&M Denmark ○ David Palm – Ramböll Sweden ○ David Watson – Miljø ○ Nynne Nørup – PhD at DTU Environment & Humana	
	Durability and perpetuation of the practice(s)			○ Local Culture of action and Patterns of associations between practices ○ Sense and object of the practice (learning)
		Literature review	○ The Nordic Textile Reuse and Recycling Commitment	
Zooming out on the practice of textile reuse			**Actors and sources**	**Output**
Associations between practices	**Empirical indicator**	**Instruments**		
	Contradictions	Interviews Literature review	○ Lars Riis – CEO at ELSK ○ Kaj Pihl – UFF-Humana ○ David Palm – Ramböll Sweden ○ Nynne Nørup – PhD at DTU Environment & Humana ○ The Nordic Textile Reuse and Recycling Commitment	○ Reciprocal implications ○ Local and trans-local (global) effects
	Needs			○ Practice-net

Table 1: Methodology for data collection and data analysis

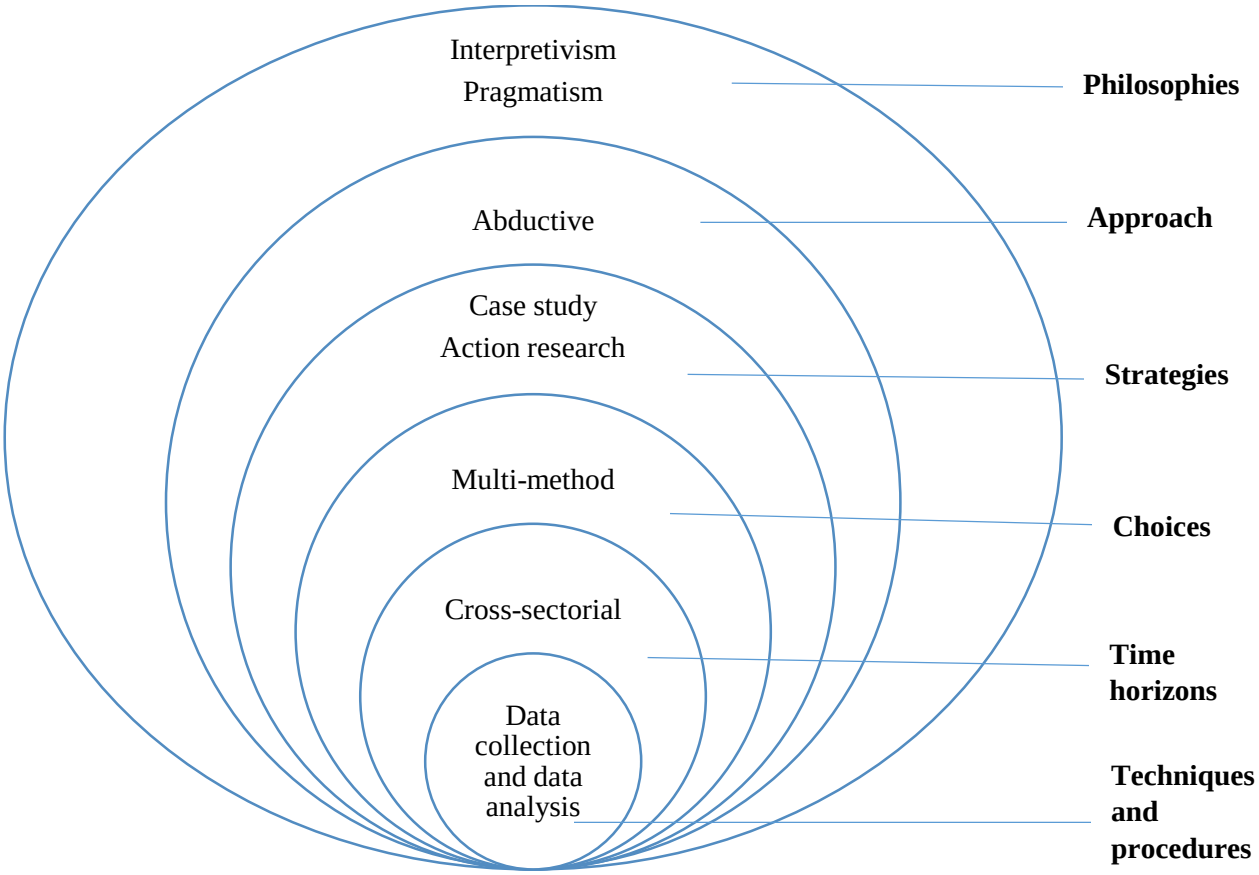

Figure 6: Research Onion. Adapted from (Saunders, et al., 2007)

5. Empirical findings

5.1 Findings on the textile re-use and recycling actors and their relation with the practices in which they are positioned

The following section attempts to answer the first sub-question of this thesis; *Who are the actors and how are they positioned in the practices of textile re-use and recycling in which they are engaged?* The findings within this part of the paper, are structured following the empirical indicators order of appearance stated earlier in Table 1. Firstly, pointing out the players in the textile re-use and recycling sets the scene of the status-quo of the main actors involved in these two practices. Concretely, the name of the organizations which have been investigated and the activities corresponding to each of the firm's re-use and/or recycling practices are also provided. Secondly, the materialistic side of the practice is under the lens. This endeavors to show how and to what extent non-human factors affect shaping the "doing" in the practices.

5.1.1 Actors and the active role of material elements in the practice

The main players involved in the textile flow can be found in the figure below. Highlighted in red squares are the focus actors which are interested to the project.

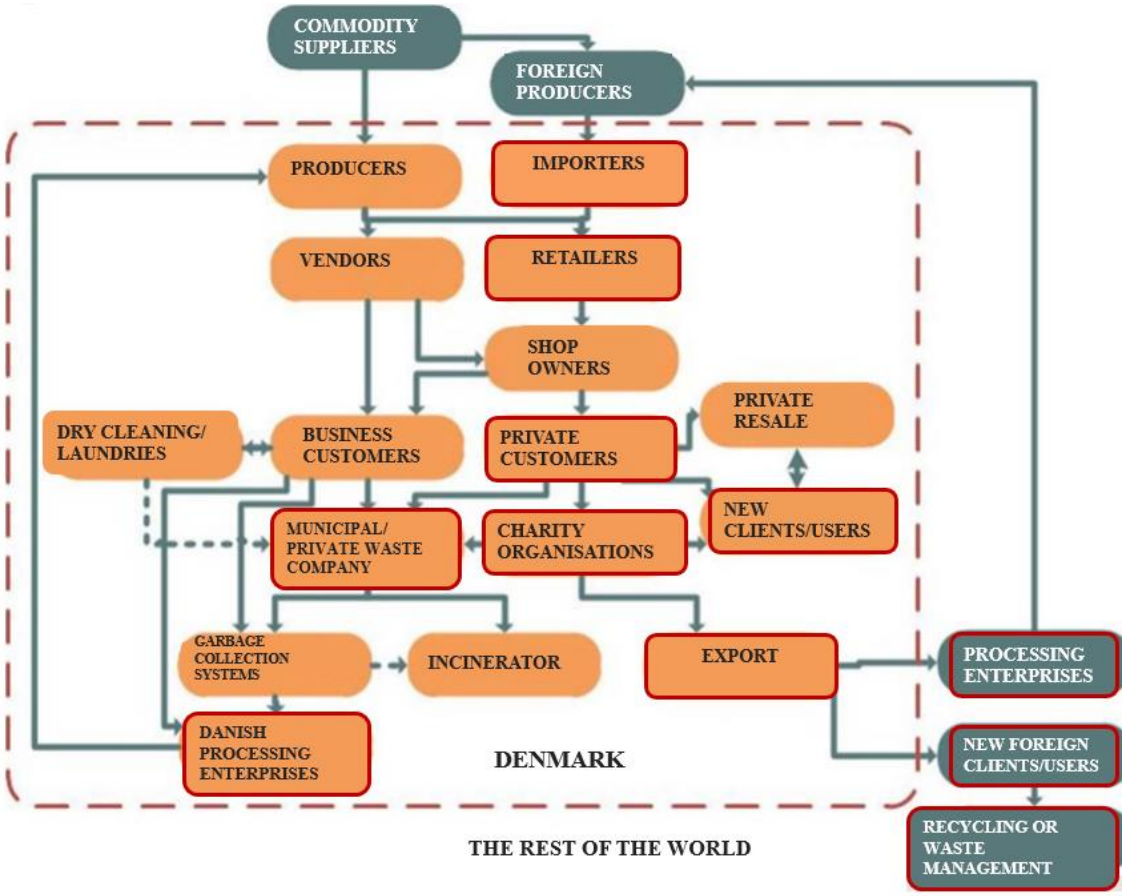

Figure 7: Textile flow between players in Denmark. Adapted from (Innovationsnetværk for Miljøteknologi , 2013)

There are a number of actors that should appear also in the picture of textile flows however, they have not been considered relevant enough to be object of analysis in this paper. The players that exceed the limits of the project scope are the following;

- *Business customers* who take textiles (in big quantities) from shop owners and sell/exchange them to dry cleaning/laundries for different purposes.
- *Business customers* who do the same thing with Danish processing enterprises, garbage collection systems and municipal private waste companies.
- *Private resale from private* (households) customers of retailer shops.
- *Private resale from those new users* who are clients of charity organizations.

The reason for excluding them lies on the difficulty of gaining access to information as some of them were contacted but they either mentioned were busy or they did not reply.

Textiles themselves, are the main material element around which the practices object of analysis in this research are constructed upon. Without textiles these Activity systems and consequently, the Collaborative Textile Recirculation practice, could not exist.

The organization infrastructure of Blå Kors Genbrug object of analysis for the practice of *textile re-use* entails basically a two-floor building. The second floor is for selling the clothes with a relatively small area reserved for the sorting of textiles (storage and activity room). The logistics are supported by a warehouse (located in Aalborg) which stores the textiles (when there is a lack of space at the storage and activity room) which will be sent eventually to exportation. The shop counts as well with an online platform where the clothes are also sold.

The common sense is not deemed to be a material element, however it is what rules and guides most of the textile reuse activities in the organization on a daily basis. Sometimes it is normal to come across with the general belief of charities been sustained by elderly volunteers. This is for example the case of Blå Kors Genbrug and it has an explanation and consequences in relation to the use of material elements. As it seems, normally organizations ran by volunteers depend totally upon the people´s availability. Meaning that it is quite complicated to have a constant work load done every day. The problem is that the discarded textile´s flow never stops coming in the biggest shop of Blå Kors Genbrug. The reason for this is simple; "*Fast fashion is forcing charities to process larger amounts of garments in less time to get the same amount of revenue—like an even more down-market fast-fashion retailer*" (Wicker, 2016).

Therefore, Blå Kors Genbrug feels the need of gathering more volunteers to keep up with this growing wave of textiles in the shop.

Elderly people usually have more free time and as a result, they dedicate more hours to the charity when possible. These volunteers come to help regularly one to two or three times a week and perform activities without the need of guidelines.

Blå Kors Genbrug is the perfect example of a second-hand organization with limited resources. This can be reflected not only in the lack of material elements that are used in the routine activities of the charity but also in the absence of attention to some of them.

When it comes to the collection of the discarded clothes, there is no such thing as a city container map, and if there is, it is not used by the volunteers. The practitioners know exactly the location of the containers and when to pick the discarded textiles from them.
The landscape of material elements used for textile sorting at Blå Kors Genbrug is broad and every object has an important function to facilitate the tasks embedded in the textile sorting activity. Nonetheless, it is apparent that there is chaos within the order at the sorting task. Meaning that every new volunteer at the shop learns by observing veterans (senior volunteers) and also by some oral indications or recommendations that other volunteer may give them. All in all, the learning process at the shop is reduced to "learning-by-doing".

The sorting takes places on one side of the second floor of the shop. The Access in only allowed to volunteers who normally wear an apron with an identification badge. In here the separation between volunteers who handle the household textiles and the clothing is clear. Though these two categories of textile get mixed in the same plastic bags when they go to export or to the incineration sector within the shop.

The value for reuse of a used textile product is highly dependent on the opinion that the volunteer gives to a certain apparel item. Some may say a textile item of the product is damaged, others may say it is not and this is what makes it a sellable item or been discarded.

5.1.2 Durability and perpetuation of the practice(s)

When looking at *patterns of associations* between the practice of reuse at Blå Kors Genbrug and other practices, it can be highlighted that currently, the shop is only connected to another Activity System in the textile recirculation arena; the commercial collector in Belgium. This Activity System can be considered the same as Blå Kors Genbrug (textile reuse) as its endeavors cover collection of discarded textile, sorting and once again textile export to diverse locations for further reuse. However, due to the different; nature of the organizations, available resources, distinctive sorting instruments and guidelines, etc. they are deemed to be different but interconnected Activity Systems.
These two systems are in balance with each other. The object of work links them reciprocally. The Danish charity wants to get rid of the textiles that do not hold a sufficient quality for being sold at the shop but are believed to serve in other countries with lower incomes and thus less accessibility to brand-new textiles. Meanwhile the commercial collector welcomes Blå Kors Genbrug mindset

concerning these textiles since the company wants as many fabrics as possible regardless of the condition they have. This is because the collector has relation with many other Activity Systems (reuse, processing enterprises, etc.) and knows what to do with each type of textile. Consequently, the collector does not demand any kind of especial sorting from Blå Kors Genbrug. This means the textiles sent by the charity can be in bad conditions (dirty, smelly…). This is translated as less work load for the volunteers at the shop who decide (based on their personal judgement) what to send to export or what should go to incineration. There are no guidelines involved. However, this apparent win-win dependency or interconnection with the two Activity Systems can have consequences related to the textile flow control in the value chain. Without a regulated sorting at the shop, some textiles of certainly low quality or with stains on the material may be sent to the commercial collector believing that they will be further reused when, in reality, this might not be the situation. In the best case scenario, this collector may forward the textiles to processing enterprises located in Eastern Europe. In the worst case, these textiles are considered inadequate to be re-sold firstly in second-hand markets and secondly, to the processing enterprises (the collector has as contacts), thus these textiles end up being discarded for incineration or landfill (depending on the country where they are being handled). The latter pictures a scene where assuring what happens to the textiles exported from Blå Kors Genbrug is quite imprecise. Furthermore, this exceeds the Blå Kors Genbrug setting and could be applicable to other second-hand markets with similar textile "trading" management. The outcome of this situation may be direct consequences in the statistics regarding percentages of textiles that are reused after surpassing the control of the first second-hand market actor in the textile value chain. The numbers may not add up accurately meaning the percentage of textiles which are truly reused may vary to certain extent being this issue hard to proof.

David Palm partly disagrees with the possible loss of textiles throughout the value chain as he pointed at textiles as money. This comparison brings on the statement of "no-body wants to lose money" thus the collectors may make sure that the items that can be reused are thoroughly fractionated from the rest of the fabrics for this reusable purpose as it is the most profitable for them. The same case with what is optimal to be recycled. Though in this case, given the little profit of the mechanical recycling, some collectors may not bother too much with it thus discarding part of the textiles to incineration directly as the transport costs may be higher than the value of these

textiles. However, this is a “black-box” for this research project as it was not possible to interview any of the commercial collectors that were contacted.

5.2 Findings on the contradictions faced by the practices due to the interaction among them?

The findings treated in this section are related to the second sub question of this research; *What are the contradictions faced by the textile recirculation Activity Systems due to the interaction between them?*

Primarily, it addresses the charity Blå Kors Genbrug on a local scale. Potential conflicts and tensions are unfolded based on possible different types of collaborations which can be further developed at the charity with other textile material recirculation Activity Systems.

The contradictions are identified following the theoretical framework depicted in the methodology (4.3 Research design).

When extending collaborations, the purpose of and ideals surrounding the managed textiles may be altered within the Activity System of textile reuse.

In the case of Blå Kors Genbrug, the current object of work are textiles donated by individuals. The idea the organization has about them is as one of their most valuable central sources of income. The value behind them is connected to their reusable capacity normally dependent on the textile condition.

For instance, Blå Kors Genbrug sees the incoming textiles with economic and social lenses, but not with environmental ones. This may have started to change. An example could be the proposal of this project which has arisen certain interest on involving environmental aspects of the charity as so far the organization did not have any kind of environmental drive. Thus, the appearance of the “expert volunteer” figure in charities which carry out the reuse of discarded fabrics may have initiate changes in the way the object of work is appraised. This go hand-in-hand with potential contradictions at an object Activity System level due to the introduction of this new “expert volunteer” element from outside.

On a different note, Kaj Pihl from UFF-Humana points out at the increasing number of competitors around the expansion of the textiles collection.

This is why now, more than ever, differentiation among collectors (also charities) is necessary.

Kaj Pihl: "*Collectors are happy once they have sold the clothes* (…)".

Therefore, a small step for making a distinction from such actors could be to add other types of value to the collected discarded textiles other than mostly monetary and social.

In relation to an improvement the control of the actions of further actors in the textile value chain; If a collaboration with external actors is set up with Blå Kors Genbrug in order to improve the control of the actions of further actors in the textile value chain, this could initially generate contradictions around two elements of the Activity System of the shop; *Division of work* and *Rules* at Blå Kors Genbrug. One of the reasons for the rising of contradictions related to these two system elements is that new norms should be promoted in order to guarantee the access to resources such as information. This enters the field of internal changes of elements (contradiction type 2) at first, and ends up triggering tensions (contradiction type 3) in the connected Activity System (the commercial collector) as well.

In the first reference group meeting of the Nordic Textile Reuse and Recycling Commitment it was stated that "*There are often very complex chain of actors from separate collection and forward*" (The Nordic Council of Ministers, 2015, p. 4). Participants of this reference group representing charities, collectors and other actors within the textile reuse and recycling practices stressed the importance of controlling the activities of all actors in the chain till the end. However, this raised the question of "where is the end?" An expert within the field of certification systems indicated that when it comes to a normal chain of custody, the collector should be able to authenticate its contacts (The Nordic Council of Ministers, 2015). This comes with a problematic inquiry which came up at the reference group; "*What information do collectors want to have communicated and what should not be communicated?"* The measures that may address conflicts or tensions which derive from managing this *transparency issue will be further reported in section 5.3.*

According to the author Huijstee, there are several identified sources of potential disturbances or tensions which can arise from collaborations of charities or NGOs with private companies. These can be classified under the groups of; *Realm, Power Form, Resources Accessible* and *Knowledge* (Huijstee, et al., 2011). Nonetheless, it has been noted that these sources of tension apply as well in charity-to-charity interactions which is found to hinder collaboration with each other.

Regardless of been under the Social realm, charities rather not working jointly as they see each other as competitors. The resources available to each charity or the legal entity they belong to also is seen as an impediment for collaboration. Each charity has their own priorities also when it comes to managing textiles and the environmental realm does not always figure as one of them. This is the case of Blå Kors Genbrug whose interest does not go beyond making profit from selling the clothes, so they may wonder what is there for them in making collaboration with other charities. This issue is further addressed in section 5.3.

Concerning charity-private companies the situation is quite similar. Mia Møgelgaard from H&M claimed that the fashion retailer has not included charities in terms of partnerships for handling the textiles given the differences in realms.

Mia Møgelgaard: "*H&M collaborates with charities such as Red Cross only in form of donations (…) the charities have a social approach only and we have also environmental*".

In fact, this is the case at Blå Kors Genbrug, which is mostly focus on the Social Realm.
H&M seems to have the impression that with collaborating towards a better collection, and further sorting and recycling of textiles with the efforts of charities may encounter contradictions presented in the form Mia Møgelgaard denominated as "*barriers*" and "*producer responsibilities*".

Furthermore, these potential collaborations charity-charity but mostly charity-private company may need a change in sorting operations at Blå Kors Genbrug. This may end up having an effect

or tension in the interconnected activity system of the commercial collector. These contradictions may not be excessively important given the volumes of textiles exported are not as high as other bigger charities who also export to this collector. However, regardless of the degree of disturbance it is clear that this might be manifested most probably in the interconnected system.

If a collaboration with Blå Kors Genbrug and organizations within textile recirculation Activity Systems seeks to maximize the reuse rates with real facts and figures, then conflicts will arise in the Activity System of the charity. Disturbances will affect the elements of *Division of Labor*, *Community* and *Rules* at Blå Kors Genbrug. The category of disturbance can be named as "Conflict of interests" among these activity elements.

Firstly, one idea that can assure the control over the destiny of the textiles is to add another category to the sorted textiles at Blå Kors Genbrug. This way there would not be just a two sorted discarded textiles´ sectors at the shop (exportation and waste) but a third one which can be denominated as "faulty" for instance (the suggestions/requirements will be further explained in section 5.3).

> The consequences of announcing and implementing changes in the textile sorting activities at Blå Kors Genbrug will at first, prompt a conflict of interest within the Community at the charity. Not everybody will agree with making internal changes of the main Object of work at Blå Kors Genbrug (the used textiles). Some volunteers may not share the interest of assuring these textiles end up in the right place environmentally speaking, while some others may find this as crucial to contribute to a better environmental management at the organization. Other disturbances arise due to the requirement of new different tasks and more balance in the activities carried out by the volunteers and the artefacts available in the system (disturbance affecting the element of Division of Labor). Furthermore, the Activity elements of Instruments and Rules will be disturbed as well. Given the probable necessity of applying new written codes and possible norms which regulate the new proposed actions.

5.3 Findings on requirements for expansion of the collaborative practice of textile recirculation

An idea for controlling the end line destination of these textiles is what UFF-Humana considers as highly important;

> Kaj Pihl: "What helps controlling the textile flow in the case of UFF-Humana is *using sorting facilities that we know* ".

However, this could not be easy for Blå Kors Genbrug due to lack of space. Though making the most of the current one is possible in some ways. The idea briefly stated in 5.1 and 5.2 of not sending (from the charity) all the reused textiles to a bigger collector in Europe but separate by, for instance, presence of faults can be a suggestion for improving the control of the textiles in their journeys to other countries.

Finnish participants at the first meeting of the NTC showed discrepancies to mix *"collection of textiles with worn, torn and incomplete textiles since this is collection of textile waste"*. In this regard David Palm shared *that "for the average person is difficult to differentiate between reusable and recyclable textiles. There is a question of reusable for whom, since preferences differ heavily between different geographical areas"* (The Nordic Council of Ministers, 2015).

The phrase the more local the better not always work with all kinds of textile recirculation options. When it comes to reusing in Denmark for example, Kaj indicates that; "*There are many more opportunities for the reuse of textiles when not working only locally*".

However, the suggestions which are being shared here are looking at the re-manufacture or recycling potential of textiles that might not be able to be resold not even in really poor countries. Simple and straight-forward separation of textiles can be done with the current resources of small charities such as Blå Kors Genbrug . One category would be the ones that have a small stain, or cuts and can therefore be "re-manufactured" or fixed, if not at Blå Kors Genbrug (due to lack of human resources or time constraints) then at other facilities. They can also be given directly to people in need.

Another classification can be to make a separate sorting for home textiles and another one for clothing exclusively. So the first one would need to require the search of processing enterprises (as much locally as possible) while the second one can either continue following the path of exportation and reuse somewhere else in the world.
On a different note, when it comes to improve the control of actors in the value chain, labelling instruments or other certification systems can ensure the access to information especially from big collectors. Examples can be taken from the NTRRC.

Nikola Kiørboe, Dakofa: "*The Nordic Textile commitment could improve on the tracking of used textiles significantly, if implemented widely by the collectors".*

Nikola Kiørboe, Dakofa: "*The commitment itself is a really good idea, but if it should serve its purpose and improve on tracking and controlling the textile flows downstream from post-consumption, it would be necessary to deal with the legal issues and possibly also to make the certification system mandatory for all collectors eligible to collect used textiles and textile waste. This could e.g. be done if municipalities only allowed certified actors to collect the textiles. A different way of doing it (or perhaps a supplement) could be to set targets on reuse and recycling. However, these targets should only be possible to be met by presenting proper documentation on the final fate of the material, meaning that you would not be able to say that your textiles had been reused just by selling them to someone who said that they would reuse them, not really knowing whether this actually happened".*

Kaj Pihl, UFF-HUMANA*: However, a collaborative approach is needed: "There should be higher emphasis in the efforts of the charities to reach new higher environmental standards by attempting to find common ground with different organisations, with companies, and with municipalities".*

SB2			SB3
COLLABORATION ORIGIN OF THE CONTRADICTION	**AFFECTED ACTIVITY ELEMENT (S)**	**CATEGORY OF CONTRADICTION (S)**	**FUTURE REQUIREMENTS FOR EXPANSION**
Enhancing environmental performance	*Object*	Type 2.b- *Importation of new elements from outside* "The expert volunteer"	-Join efforts for increasing Human Capital -Add more layers of value to the textiles
Improving control of actors in the value chain	*Division of work* and *Rules*	Type 2.a-*Internal changes of current elements of the Activity System* Type 3.- *Interconnections with other Activity System*	-Norms for ensuring the access to information -Use sorting facilities that the organization owns/have control of
Guarantee the maximization of reuse rates		Type 3.- *Interconnections with other Activity System*	-*Operate in good faith to avoid conflicts when they arise*

Table 2: Summary of Findings (own creation)

6.Conclusion

6.1 Contribution to this paper

The aim of this project is to investigate how can a Collaborative Textile Recirculation practice be represented and further developed. Thus, the primary contribution of this research is the application of a Practice-Based view approach of one of the activity systems part of the textile recirculation net; the reuse of textiles. The research gives insight into how this practice is carried out as an activity system which does not work only independently but is also part of a bigger network of recirculation activity systems. Besides the chosen theme and field of study, the innovative side of applying Theories of practice in this paper is that the information primarily comes from an Action research whose setting is the second-hand shop Blå Kors Genbrug located in Aalborg. This allowed two different things, to put into practice a former theory into the status-quo of the activity system of textile reuse and to gain direct information about the practice that may help further developing it, in sync, with other approaches.

Representing and further develop the practice of Collaborative Textile Recirculation can be done by understanding first the functioning of the activity systems working under the same field of recirculation of discarded textiles, and secondly, analyzing how different measures may help overcoming possible conflicts that arise in associations with other textile recirculation practices.
Answering the first sub question "*Who are the actors and how are they positioned in the Activity Systems of textile re-use and recycling in which they are engaged?*" entails the necessity of taking a closer look, through theoretical lenses, at the actors involved in the activity systems working within this practice. These players are basically organizations carrying out the collection of discarded textiles (charities or commercial collectors) and further sorting for textile sale with reusing purposes. Also, there are organizations working as textile processors (normally mechanical recycling plants). Representing the practice needs to enlighten the positioning of these actors in their own respective activity system, and for that, mapping the elements within these activity systems is a fair option. The study approaches this first step to represent practice, analyzing how the actors involved in the activity system of textile reuse at the charity Blå Kors Genbrug make use of the material elements available in the setting. This initial screening reveals

malpractice, inadequate or inefficient use of infrastructure, resources, and simplistic patterns of associations with neighbor activity systems specially in terms of transparent communication and further control of actions between actors (regarding textile fate). This was the case in this research study. Environmentally speaking, finding leakages or inconsistencies whether small and apparently not significant, can have a positive impact in the organization if they are well handled in the future.

Because the collaborative approach is notably patent in this project, the measures to tackle the evident presented environmental performance gaps, emerge from involving actors from other textile recirculation activity systems. No matter how well this interaction is piloted, it will affect somehow the daily routine of the textile reuse at Blå Kors Genbrug. The findings related to the second sub question; "*What are the contradictions faced by the textile recirculation Activity Systems due to the interaction between them?*" showed that the contradictions faced by the textile recirculation Activity Systems due to the interaction between them are generally conflict of interests due to importation of new elements from outside, internal changes of the current elements of the activity system and communication problems because of the interconnection with other activity systems.

These contradictions are the reason why the practices evolve, thus in order to give an answer to the last sub question of this paper; "*What is required by the identified actors to facilitate the expansion of the practice of collaborative textile recirculation?"* is necessary that the actors embark on a series of singular measures. First, the activity systems and its neighbors should be on the same page regarding the importance of handling the textile flow genuinely. This means, all the interconnected activity systems should have the same level of interest in regards to the successive destinations of the textiles and the way they are handled. Ideas for this are that in order to set up or continue with the current collaboration with the activity systems both should be required to report to each other on the textile flow. This information should be as transparent as possible and should allow internal audits if necessary. This is something the organizations should do as part of an integral environmental management system; it does not only differentiate the actors involved but can assure a secure handling of this textiles. Put differently, continuous control over the textile flow handled among activity systems signify the textile recirculation into the system with the least leakages possible.

Consequently, the textile reuse and recycling needs stronger commitments among old and new textile supply chain players, as well as fresh and different actions in order to increase the efficiency and understanding of these practices (Palm, et al., 2015). Examples of this could be closer collaborations between charities and recyclers specially in regards to unsellable items that the second hand retailers normally gather (Palm, et al., 2015). Additionally, comprehending and clarifying second hand retailers business conducts, actions and challenges, would pave the way to an enhanced collection and reusing performance (Han, 2013).

Finally, the creation of more local value-chains should be studied further on as it is for now, not enough attention has been destined to their development from International projects (Klepp, et al., 2015) on a large scale (ETP Fibres Textiles Clothing , 2016). Among the reasons that justify this situation are the disconnected presence of small and medium textile enterprises (SME) which apparently interfere with the capacity the textile industry has for enforcing other new stakeholder alliances along the value chain (ETP Fibres Textiles Clothing , 2016). Also, *"uncertainties in the required investments and long-term economic viability of circular business models and the absence of long term commitments with retail and waste processors"* count as current limitations or hurdles (ETP Fibres Textiles Clothing , 2016).

6.2 Practical implications

As practical implications, it is important to state that what is suggested in this project is not a "new practice" for textile material recirculation. This practice already exists but on a lower scale. Put differently, it is obvious that all textile reuse practices are interconnected and interdependent, to some extent, of each other. But this does not mean the collaborative approach is maximized especially in relation to environmental approaches. Examples of this are the recent projects of the Nordic Council of Ministers which bring together different practices within the textile material recirculation in order to improve aspects such as controlling volumes of collected textiles. However, it comes forward, for example, that relatively big organizations are the ones which usually are chosen and are willing, at the same time, to engage in this kind of projects. These organizations have more resources which can help them avoiding potential and common troubles, contradictions, conflicts compared to small ones such as Blå Kors Genbrug. Moreover, within the current high degree of difficulty, that was found during the first pilot of the Nordic Textile Commitment, to count volumes of textiles till at least one actor beyond the reach of the collecting

organization in question, this still is an easy thing to do for big organizations than to small ones. However, preliminary findings in connection to this pilot project observed that counting volumes of textiles was required from the participants without solving first transparency and trust issues with actors further involved in the textile chain. This has environmental consequences as textiles flows may not be able to be tracked.

For similar reasons, this research believes that it is crucial to assure the incorporation of small-medium charities in collaborative pilot projects regarding textile collection, sorting, reuse and recycling in order to contribute to a better cast-off textile recirculation and to improve as well this transparency and access to information issues. But for that, it is necessary to study in detail how each of these organizations work in solitary and then, map possible conflicts that may arise due to implementation of new measures. This was the initial drive for this study at the beginning since it was considered as a key analysis to be conducted if a practice was aimed to be expanded. For this reason, the theoretical analysis applied, was aimed to look first, at the current usage of material elements within the practice of textile reuse as this would allow to find lack or poor management in relation to handling textiles with environmental points of view. Secondly, possible collaborations with the way the elements of each Activity System interact within the system in question and with the other Activity System´s elements. Also the contradictions from this interaction. This helps to understand the Activity System of textile reuse better and facilitate the election of requirements for further expansion/evolvement of the practice. Findings in this regards showed how is necessary to look for incentives and common grounds to gain more transparency in the textile value chain and therefore, better control of the destination of the discarded textiles.

6.3 Limitations

Nonetheless, it must be noted that the project is mostly based on a case study, complemented with frontline expert's views on some matters. A larger set of data would be necessary to back up the findings of the analysis. Nevertheless, as a presentation of the reuse of textiles from a practice based view approach, this study is the first effort of this kind towards a better understanding of the practice in a small charity context and the challenges that it may face when joining other Activity Systems.

The selection of the charity level was among other reasons due to the easy accessibility as well as the interest showed for engaging in environmental approaches. Initially more charities were aimed

to be contacted in order to get a broader and more represented view of the practice of reuse within this context, but due to time constraints it was not possible. Additionally, recycling plants were to be contacted, however after conducting literature review and having interviews with experts in the field, the textile recycling still needs development so it was not considered to be useful for the study (at this point).

These limitations should be kept in mind when considering our results and their implications. Nevertheless, the issues tackled in the study plus the type of analysis and related findings, provide new insights for academics and practitioners alike.

6.4 Further research

As future research directions studies with a longer timeframe could focus on;

- Use of SWOT and organizational studies as a supplement to Activity Theory for understanding and depicting practices of textile recirculation. The application of a "story-telling" approach when narrating a day in the practice of textile reuse can be used to gain a more precise overview of how the actors perform in relation to the available tools of the Activity System in question.
- Looking at the bigger picture; where and how does the consumer stand in the discarded textile flow chain should be studied. The reason behind it is that private consumers can continue using textile end-of-life routes such as "reuse" but still follow a fast pattern of consumption. As Klepp states; "*A closed loop is preferable to a resource-to-waste loop; but what if whatever is to be recycled has not even been used or is far from ready for a "cradle"*? (Klepp, et al., 2015).
- Proposal of a common criteria for textile sorting in integration with International standards such as ISO14001.
- Thorough legislation analysis of other textile material recirculation systems in Europe e.g. French system.
- Hazardous substances implications in textile material recirculation settings, especially in the activity system of recycling e.g. proposal of criteria and method for sorting.
  Consumption and production of new textiles leads to significant environmental impact.
  By reusing textiles instead of purchasing new, and by recycling worn-out textiles, the use

of resources, water, energy and chemicals is reduced. Increased reuse and recycling is, however, difficult to achieve without increased collection. A transparent and reliable management of textiles favoring legitimate actors on the market is required to boost the collection rates.

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