‘Completely Obscure, Just Like Sustainability’

A Critical Analysis of Circular Economy Principles Within the Swedish Fashion Industry

Madelene Danielzon Larsson

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LUCSUS
Lund University Centre for Sustainability Studies

LUND UNIVERSITY

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Supervisor: Sara Gabrielsson, LUCSUS, Lund University

Abstract

The fashion industry is currently operating at high levels of material throughput leading to global annual emissions reaching a staggering 4 metric gigatons of CO_2e. Almost reaching the levels of the entire EU-28 in 2015 of 4.45 metric gigatons. As consumption levels could increase by as much as 63% by 2030 there is urgency to address the situation. The application of Circular Economy (CE) principles within the Swedish fashion industry has received increasing attention where it is promoted to offer a pathway for sustainable transformation, within the political and industry discourse. By employing strategies towards intensified product and material use avenues are explored to overcome the throwaway linear economic system to avoid resources becoming waste. However, previous research shows that sustainability science is not sufficiently engaging in critical analysis of the CE concept. Additionally, there is low consensus concerning the underlying values and ideological foundation of the CE and if it is conducive for enabling action and change towards a more sustainable production and consumption system within the fashion industry.

This thesis therefore conducts an analysis of current research and development for a fashion CE within the Swedish context utilising Robert Cox's critical theory framework. The aim is to contribute to a better understanding of what the CE can contribute to improve sustainability within this production and consumption system. This is done through interviews with leading researchers, review of academic and grey literature within the field of CE and fashion, as well as review of policy relevant documents.

Findings from this analysis show that there is an important initial position held within much of the empirical material, that an absolute reduction of material consumption needs to take place. However, the ways in which this in envisioned and actualised within the confines of the CE concept is not found to be conducive for this goal. Instead it produces a depoliticising account of consumers where business models and sustained economic growth obscures the limiting factors in decoupling economic growth from material consumption. The role envisioned for formal institutions, as simply a facilitator of economic growth and market failure adjuster, is found to be insufficient to meet the demands for improvements to the sustainability performance of the industry. However, structural constraints within the international political domain poses significant barriers towards imposing stronger actions for promoting a sustainable transformation within the fashion industry.

Keywords: Circular economy, fashion, critical theory, consumption and production system

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List of Abbreviations

Circular Economy	CE
Critical Theory	CT
Critical Realism	CR
Cradle to Cradle	C2C
Ellen McArthur Foundation	EMF
End of Life	EOL
End of Use	EOU
Extended Producer Responsibility	EPR
Mistra Future Fashion	MFF
Polluter Pays Principle	PPP
Research and Development	R&D
Sustainability Science	STS

1 Introduction

The fashion industry is currently operating at high levels of material throughput as half of fast fashion[1] garments consumed globally is disposed within a year (EMF, 2017). Environmental assessments of Swedish fast fashion consumption showed that if garments are used three times longer, carbon and water footprints of production could be reduced by 65 and 66 percent respectively (Roos, Sandin, Zamani, & Peters, 2015). This situation becomes increasingly urgent to address as global annual emissions from the industry was estimated to have reached 4 metric gigatons of CO_2e (Quantis & ClimateWorks Foundation, 2018). Almost reaching EU-28 levels of 4.45 metric gigatons in 2015 (Eurostat, 2018). Applying predicted growth trajectories the textile industry is expected to use 26% of the total carbon budget by 2050 (EMF, 2017). Further environmental impacts caused by the industry tie to high levels of pollution due to extensive use of chemicals in the supply chain (Roos, 2016). Conditions within the supply chain not only cause severe impacts on human health, but also to human rights (The Circle, 2017). Swedish consumption of fashion have high risk of impacting these conditions as they correlate to wages below 2 USD and child labour within the supply chain (Roos, Sandin, Zamani, & Peters, 2017).

The negative impact the industry has on sustainability is a result of a consumerist society where norms for cultural and social activities are based in practices of continuous commodity consumption (Bauman, 2007). Harvey (1990) describes the shift towards such conditions where patterns of fashion production and consumption is a prime example of the development of a 'throwaway society'. Since the 1960s consumption of fashion has become emphasised by values of 'instantaneity and of disposability' (Harvey, 1990 p.286). Consumption has become an integral part of individual identity and meaning (Harvey, 1990). However, its meaning is upheld through collective social practice and continuous acts of consumption (Kawamura, 2011). Creating a reinforcing cycle where social and cultural meaning and value is sought within commodities which are perceived as disposable. This 'throwaway society' has contributed to an unsustainable fashion industry. As global demand for fashion could grow by as much as 63% by 2030 (GFA & BCG, 2017) there is need to address material

[1] Fast fashion is a business model and production system dominating the mainstream of fashion production and is exemplified by companies such as H&M, Zara, Gina Tricot, Primark, or Topshop. The key idea is to bring fashionable and trendy clothing from catwalk to store in a short period of time. Agile and quick response supply chains allow for fast manufacturing at low costs delivering fashionable and trendy clothing to consumers at a low price. Such business models have led to increasing rates of material consumption.

consumption and its resulting impacts. For this purpose, the concept of a circular economy (CE) has received much attention both within industry, research, and policy. The CE could be described as a cluster concept linking together different disciplines and strategies towards resource efficiency to overcome the throwaway, linear system and avoid useful resources being wasted (Geissdoerfer, Savaget, Bocken, & Hultink, 2017; Korhonen, Nuur, Feldmann, & Birkie, 2018; Merli, Preziosi, & Acampora, 2018). The aim of a CE is to provide value and utility using less material resources, through innovation in production and consumption practices (Kirchherr, Reike, & Hekkert, 2017) to be able to decouple natural resource depletion from economic growth (Ghisellini, Cialani, & Ulgiati, 2016). The CE has been acknowledged by the Swedish government for achieving Agenda 2030, especially goal 12 for sustainable production and consumption (Prop. 2017/18:146). For the fashion industry the CE is identified to guide the ambition to make Swedish fashion world leading in sustainability (Government Offices of Sweden, 2017).

1.1 Problem Statement

Despite the increased attention for CE principles, academic engagement of sustainability science (STS) is falling behind (Geissdoerfer et al., 2017). STS seeks to find holistic solutions to complex challenges facing society today which cut across both natural and social sciences (Jerneck et al., 2011). Sustainability is here viewed as the need to consider and balance the three areas of environmental, social, and economic concerns within societal developments[2] (see figure 1) (Connelly, 2007).

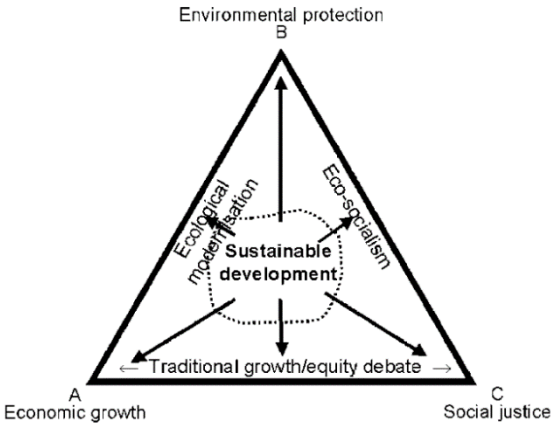

Figure 1. The three areas of sustainability. The interconnectedness between the three areas is visualised to form a heuristic framework of different tendencies within sustainable development (Connelly, 2007).

[2] This view makes no claim to provide full analytical explanation for ideas of sustainability which are 'essentially unquantifiable, complex and themselves contested concepts' and will always be a simplification (Connelly, 2007 p.274). It is here used as a heuristic device to aid the examination and analysis of the CE concept. It allows one to consider the relationships between CE principles, policies, and R&D programmes and its potential to steer away from the negative impact it is currently having.

This makes the CE important for STS engagement as it claims to resolve contradictions between natural and social systems while at the same time enable continued growth of economies (EMF, 2017). However, Blomsma (2016) claims that there is no framework for the CE that has a rigid structure of reasoning as to why certain strategies are preferred. Studies point to a research gap analysing social, and political values that guides such preferences and the possible institutional implications of a CE (Kirchherr et al., 2017; Merli et al., 2018). For these reasons I argue that critical engagement by STS is necessary. To do this I approach the CE concept utilising Robert Cox's critical approach for analysing the political economy (see section 3). This is done to assess how sustainability problems are characterised through social, political and normative dimensions, which impacts the potential success of sustainability solutions (Miller, 2013). Thus, defining the potential for change offered by the CE concept.

1.2 Research Questions and Scope

This thesis addresses aspects of the identified research gap utilising Cox's (1981) heuristic framework where structuring forces, *ideas*, *material capabilities*, and *institutions*, are analysed to discern potential for change of unsustainable practices (see section 3.1.2). Focus is placed on formal institutions as there is an expressed desire within this domain to support development of a CE in Sweden. Aiming to contribute to a better understanding of what the CE contributes to sustainability, by utilising the Swedish fashion industry as a case, the overarching research question of this thesis is: **What potential does a CE offer to change persistent unsustainable practices in the production and consumption system of the fashion industry?** As change would simultaneous be dependent on intersubjective meaning, which successfully breaks with the ideas causing conflict in the first place (Leysens, 2008), the following sub-research questions are examined:

1. How are shared notions, of the organisational principles of a textile CE, operationalised to challenge unsustainable practices within the fashion industry?
2. How does CE principles challenge current arrangements of production in the fashion industry to reduce resource use?
3. What institutional basis is suggested, through policy, to support an alternative and more sustainable fashion industry?

To answer these RQs I will apply the theoretical framework with particular focus on the Swedish field of research and development (R&D) for a fashion CE. A large part of the material reviewed to answer

RQ one and two is produced within two of the leading research programmes within Sweden, RE:textile[3] and Mistra Future Fashion[4] (MFF), and by the extended network of researchers engaged in this field. The R&D field is in this thesis viewed as an epistemic community (Bache et al., 2016) with recognised expertise and competence, thus holding a legitimate claim for policy-relevant knowledge. Thus, providing important insights to apply to the analysis of policy to answer RQ three.

1.3 Thesis Structure

In the following text, Chapter 2, a brief introduction to the CE concept is given. In Chapter 3 Cox's theoretical framework is introduced and key concepts for analysis presented along with its ontological and epistemological implications. In Chapter 4 I discuss the findings from the empirical material analysed to answer my RQs. In Chapter 5 the final conclusions are presented based on the potential for a CE to support a sustainable transformation of the Swedish fashion industry followed by recommendations for future research.

[3] RE:textile is a research programme connected to Borås University of Textiles where aspects of design for extending product lifetime is held as the aim of research activities.
[4] Mistra Future Fashion is a consortium of researchers and industry stakeholders engaging in research spanning the full life-cycle of fashion products.

2 Background

The increasing attention paid within political institutions in Sweden to the CE concept is in line with the overarching direction taken within the European Union (EU) with the introduction of an action plan for implementing CE principles at EU level (Commission Communication, 2015)[5]. This has led to increasing focus on how to more strongly implement the waste hierarchy (see section 2.1) and polluter pays principles (PPP) as per the EC Waste Directive (Directive 2008/98/EC). Within this political development the Swedish Government has commissioned inquiries into strategies adhering to the political direction for sustainable development within the EU. Within Swedish R&D both of the research programmes of interest for this thesis are receiving funding for their activities where fashion companies such as H&M, Filippa K, Vigga, Nudie Jeans, Gina Tricot, Ellos and KappAhl all in one way or another engage with the R&D programmes to promote a CE (MFF, n.d. a; RE:textile, n.d.). Evidently, engagement and collaborations between state, industry, and academia in Sweden on this topic is abound.

Before moving forward an additional note should be made to why fashion rather than textiles is of interest.[6] Textile production and consumption can be very much based in necessity and pure use-value while fashion is a social and cultural value making it different from pure use-value textile objects (Kawamura, 2011). This distinction is made since the application of CE concepts or the appropriateness of policy measures might be impacted by this fact. Most of the Swedish textile industry as well as consumption practices is dominated by fast fashion brands (Swedish Agency for Economic and Regional Growth, 2015 in EPA, 2016), and is therefore seen as an important focus for study.

2.1 The Circular Economy Concept

Blomsma and Brennan (2017) trace the conceptual formation of a CE back to the 1960's where focus centred around waste handling to address pollution. The emergence of the debate is drawn from publications such as *Silent Spring* (Carson, 1962), *Tragedy of the Commons* (Hardin, 1986), and *Operating Manual for Spaceship Earth* (Buckminster Fuller, 1969)(cited in Blomsma & Brennan, 2017). Kenneth Boulding's essay *The Economics of the Coming Spaceship Earth* (1966) is however cited most

[5] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Closing the loop – An EU action plan for the Circular Economy.

[6] In such cases when these two become difficult or impossible to separate I will refer to the 'textile industry' as a collective term covering both fashion and textiles.

often as a key take-off for the concept. Boulding (1966) envisioned a closed cyclical economic system inspired by ecological functions 'which is capable of continuous reproduction of material form even though it cannot escape having inputs of energy' (p.7-8). As material consumption increased further developments of the concept stressed the limiting factor of entropy were materials get dissipated within the socio-economic system in increasing levels (Gorgescue-Roegen, 2011). Ultimately this pointed towards the impossibility of continued expansion of production processes due to the necessity of virgin material and energy inputs. Despite this limiting factor recent writings and academic literature are still based on the idea of decoupling material consumption from economic growth (Ghisellini et al., 2016; Kant Hvaas, 2016). This is often held as key to be able to ensure that the production and consumption system stays within planetary boundaries (Blomsma & Brennan, 2017; Roos, 2016). The first conceptualisation of the actual term 'circular economy' can be found in environmental economics (Pearce & Turner, 1990). Conceptual formation of CE at this point increasingly shifts focus from end-of-life (EOL) solutions towards maintaining economic value and a stable stock of products and materials (Blomsma & Brennan, 2017). The purpose of this CE model is to achieve a constant stock of resources over time and takes as a premise that there is a certain amount of natural resources required that should be maintained with the aim of producing acceptable standards of living (Pearce & Turner, 1990).

Most of the strategies engaged with within current CE research can be situated within the 4R framework: reduce, reuse, recycle, and recover (see figure 2), with variations regarding the combination of approaches (Kirchherr et al., 2017; Lieder & Rashid, 2016).

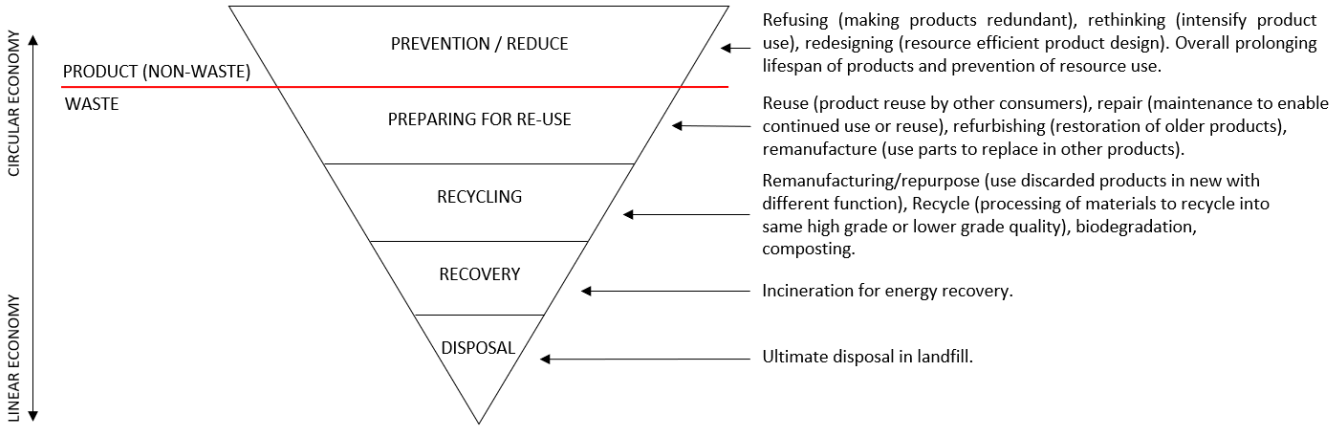

Figure 2. Illustration of the waste hierarchy for the promotion of a CE. To note is that a CE could employ strategies within all levels illustrated within the figure. The figure simply illustrates the order of prioritisation to strive for to achieve higher levels of sustainability within a CE were the main target is prevention and reduction of material consumption and the least preferable is disposal in landfill. Adapted from Directive 2008/98/EC, Kirchherr et al., 2017, Lieder & Rashid, 2016, and Potting et al., 2016

The framework employs the idea of the waste hierarchy, holding a key position within the EC action plan, pointing to the prioritisation of certain strategies over others shifting the flow of materials to remain within the economic system (Kirchherr, et al., 2017). This points to the overall aim of how materials should be used within a CE and is viewed, on its own, as a poor strategy for long-term sustainability allowing for linear approaches (McDonough & Braungart, 2002). Ghisellini et al., (2014) states that the concept requires a broader set of solutions for its realisation other than simply managing resources. These higher levels of circularity demand radical socio-institutional changes throughout the entire value chain of products and how the relationship between production and consumption is viewed (Potting, Hekkert, Worrell, & Hanemaaijer, 2016). To navigate this the CE draws from several other concepts that link together different disciplines and strategies such as Cradle to Cradle[7] (C2C) (Stahel & Reday, 1981; McDonough & Braungart, 2002), the Performance Economy[8] (Stahel, 2010), The Sharing Economy (Botsman & Rogers, 2010), and the Blue Economy[9] (Pauli, 2010 in Brennan, Tennant, & Blomsma 2015). In summarising findings from their literature review, Korhonen et al. (2018) claim that a CE 'develops systems approaches to the cooperation of producers[10], consumers and other societal actors in sustainable development work' (p.547) keeping within planetary boundaries.

[7] The conception of the C2C approach was put forward in 1981 by Stahel and Reday. The C2C referred to within this context is the trademarked framework put forward by McDonough and Braungart which used ecosystem analogies to the design of products and built environments (McDonough & Braungart, 2002).

[8] The Performance Economy focuses on the provision of services instead of products, also referred to as the functional service economy (Stahel, 2010). The idea to sell the function of products as a service is most commonly referred to as a product-service system (PSS) (Brennan et al., 2015) and holds in common with the CE concept a focus on extending product-life, reuse, repair and remanufacture practices, and waste prevention (Stahel, 2010).

[9] The Blue Economy highlights the need to work within a local context and with local material resources to create a cascading system of resource use where waste becomes input. It draws from principles within nature where waste does not exist but nutrients, matter, and energy cascade within the system (Pauli, 2010 in Brennan et al., 2015).

[10] The definition of a producer in this context is taken to foremost mean those actors who in a professional capacity places a fashion product for the first time on the Swedish market (OECD cited in EPA, 2016).

3 Theoretical and Methodological Framework

Since a CE claim to promote new ways of engagement between social and economic structures to form a more sustainable production and consumption system the theoretical framework will draw from Cox's (1981) use of critical theory (CT). The utilisation of a critical approach entails questions of how the political, economic, and social structures came to be (Germain, 2011). Applying CT opens up to critique of underlying structures and highlights the importance of ideas, produced through human agency and social power relations. Additionally, the role of ideological formations influencing perceptions of interests and determines the perceived ranges of options available for change guides the analysis (Drahokoupil, Apeldoorn, & Horn, 2009). Given the social, cultural, and political embeddedness of sustainability efforts (Miller, 2013) this theoretical approach is useful.

3.1 Coxian Critical Theory and Ontological Position

Cox stressed that in times of change the significance of using CT is greater as to not constrain oneself to present circumstances that are now subject to change (cited in Leysens, 2008). Subsequently Cox (1981 p.135) sets out five premises for CT and the ontological position adopted within this thesis (see table A). Given the premise that reality as we perceive it and the knowledge we hold of it is in constant change, our knowledge of the world is fallible and as Cox (1981) pointed out no theory can be thought of as complete in its attempt to describe it. The ontological positioning maintained within this thesis is critical realism (CR) which means that despite epistemic relativism, it is recognized that the knowledge we acquire from the things we investigate exists independent of our knowledge of them. As put by Isaksen (2016): 'there is an "external" and objective reality and I am seeking to understand it, but I am aware that all my thoughts, categories and theories are relative to what I have come across previously' (p.246).

Table A. Robert Cox's five principles of critical theory.

	Cox five premises for Critical Theory
One	Action is never absolutely free, meaning that human experience and the development of social structures occurs within a historical context which frame and bind actions taken to resolve the issue at hand.
Two	Like action, theory is shaped by the problematic. As the framework and structures for social action is constantly evolving and changing so does theory need to evolve and change with it.
Three	The principle goal of CT is to understand these changes and thus the framework for action.
Four	Historical structures of change consist of a 'particular combination of thought patterns, material conditions and human institutions.' These structures are not deterministic, but they play a significant role in forming the context in which habits, expectations, or constraints form and action takes place.
Five	The framework or structure within which action takes place should be analysed from the bottom or from outside. This aspect of CT is stressed as it aims to provide the necessary condition to investigate possible conflicts within the given framework of interest.

The historical perspective described in Cox's principles of CT is foremost attained through employing the Marxist method of historical materialism (Cox, 1981). Dialectics is employed as a crucial part of this approach and it is thought to occur through two levels. One level is through logic, by which is meant that internal contradictions are sought which reveal the 'confrontation of concepts with the reality they are supposed to represent' (Cox, 1981 p.134). As the concepts we use to explain and shape our society are continuously adjusted as history unfolds these contradictions are crucial points, within which alternative forms of social formations and developments lie. The second level is that of 'real history' were dialectic is seen as the manifestation of these confrontations which formed concreate situations and shifts in history (Cox, 1981). I am within this thesis utilising these principles for CT through attaining an understanding of the historical structures that formed the current context. Foremost I use this approach to see what internal contradictions lie within the CE concept itself between the ways it claims to improve sustainability of the production and consumption system and if these claims hold as the concept is confronted with the reality it attempts to represent. Additionally, the CE is analysed to discern if it forms a contradiction and break from structures perpetuating unsustainable practices, where process of change can be enacted.

3.1.2 Structures and Frameworks for Change

Cox (1981) developed a heuristic framework, a simplified representation of reality, of structuring forces in society (see figure 3). These social forces, according to Cox (1981), make up the historical structure and give insight into structures of social systems and modes of production. The framework is not deterministic but provide a mental framework to conceptualise how the building blocks of historical structures are configured and how they impose pressures or constraints for action (Cox, 1981). The relationship and formation of structuring forces within society; material capabilities, ideas, and institutions, are not to be seen as limited within state boundaries but can be part of a larger structure of international, or even global configurations (Cox 1987 in Newell, 2012). Additionally, each structuring force could just as much be acting to reinforce hegemonic tendencies within historical structures as much as it could act against it. Coxian CT conception of hegemony is derived from the ideas of Gramsci and views its operation as contingent on historical structures of material capabilities and ideas where the legitimacy of the status quo is based in dominant ideology (Cox, 1981; Leysens, 2008). The attention payed to different problematics and their proposed solutions are dependent on the ideology and power distributions of the hegemonic structures, meaning that attention is often directed towards what might threaten this structure of power (Gramsci cited in Leysens, 2008).

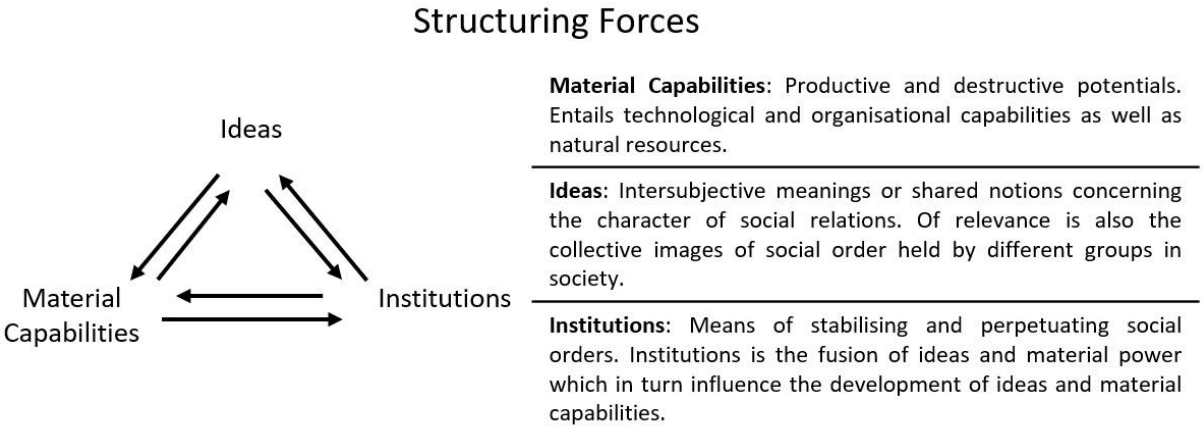

Figure 3. Heuristic framework of structuring forces. The triangle illustrates the forces within society which can express potentials for action where, depending on context, different forces play a larger or smaller role in impacting societal developments. The idea is simply to illustrate the interaction between these aspects without putting emphasis on one over the other as their relevance and influence needs to be answered through study of the case in question. (Cox, 1981)

Structural forces are thus used to define an abstract model within historical structures and are connected to each other within different spheres of activity. Cox constructed a second triangle depicting these spheres which represents domains within which historical structures can be applied (Cox, 1981). However, given the limited scope of a master's thesis focus is on how the CE concept is approached within the empirical material (see section 3.4), meaning an investigation of the structuring forces of the CE concept itself. Which could then be used to provide insight into possible implications in spheres of activity.

3.2 Epistemological Considerations and Research Strategy

The CR approach to science and research views reality as divided in three domains the real, the actual, and the empirical (Bhaskar, 2010). The purpose of research and knowledge creation is to seek the discovery of the real, the mechanisms, powers, and tendencies of the problematic (Bhaskar, 2010). Common practice of inference within CR is to seek to explain what *the real*, must be like for a specific phenomenon, discernible through *the empirical*, to exist (Bhaskar, 2009 in Isaksen, 2016). For the purpose of this thesis this entails an epistemological aim of investigating empirical material and by utilising Cox's heuristic framework attempt to connect these to the underlying mechanisms which created it.

CR lends itself well to employing a qualitative strategy where research is carried out through utilising the development of a fashion CE in Sweden as a case, operationalised through interviews, and review of academic literature and policy related documents. As causal powers, the real, is not directly observable and attainable through measurements a qualitative approach can be applied with advantage (Roberts, 2014). The qualitative analysis of the empirical material, presented below, is carried out based on Cox's heuristic framework by extracting evidence from the material which reflect the nature of the three structuring forces. Reflecting over what interactions and relationships exists within historical structures of - material capabilities, ideas, and institutions - and how they come together within the current problematic.

3.3 Methods

3.3.1 Historical Structures: Relating to the Whole

A crucial aspect of this research is relating the given context to historical structures as well as relating the specific to a larger 'whole'. To give direction for emergent structures and possibilities for change

(Cox, 1981). Given the limited scope of this thesis the method of material historicism is heavily reliant on previous theorisation on the political economic system and the intertwined development of the fashion system[11]. In addition to Cox (1981) material is gathered from political scientist's Peter Newell (2012) and geographer David Harvey (1990) to form the basis of my understanding of historical and dialectical developments of the political economy. These writers are chosen based on their legitimacy and well-established theoretical writings as well as their engagement with the methodological approach of historical materialism and CT. This is coupled with writings form the field of fashion studies where the sociology of the fashion system, its historical development, and significance in industrialised societies is explored through the writings of Yuniya Kawamura (2011). Additionally, through the literature review I continuously engage with material through snowball sampling as situations arise which demand further expansion of material that provide deeper understanding of origins to certain ideas or concepts.

3.3.2 Semi-Structured Interviews

The purpose of performing interviews is to gain insight into assumptions and perceptions held by stakeholders in the identified R&D programmes, MFF and RE:textile. Given the social situatedness of knowledge interviews are conducive in providing first-hand accounts related to the CE concept and its implications for sustainability. Interview subjects are identified through purposive sampling aiming to attain access to the epistemic community at the forefront of developments (see appendix A). The research programmes are chosen on the grounds of being well-established research hubs for this topic in Sweden. These programmes have carried out research into fashion CE during the last 3-4 years with engagements in industry as well as projects with the EPA and the public sector. They are thus considered to be well situated to give valuable insight. In total five interviews were held, each interview lasting approximately one hour and were semi-structured in design with defined themes to be explored (Kvale, 2007). Guiding questions are used but an openness maintained in terms of the sequence and formulation of the questions (Kvale, 2007). The guiding questions explore themes of definitions of CE, opinions on its contribution to sustainability, scalar relationships of space, relationships between actors engaged in the programme, potential barriers, and visions for implementation (see appendix B). The interviewees are encouraged to freely talk about their

[11] According to Kawamura (2011) the fashion system is the social and cultural system through which the fabricated cultural value and phenomenon of fashion becomes applied to clothing and apparel. This value is created through social interactions and collective practices where production, distribution, and consumption come together.

experiences and perceptions of the CE concept to allow them to expand on themes within which they have expertise and valuable insights. This approach is maintained for topics to emerge that otherwise could remain hidden (Bryman, 2016; Roberts, 2014).

Ethical considerations regarding the interviews are taken in terms of consent, confidentiality, and clarity to enable grounds for fair and accurate analysis (Kvale, 2007). Therefore, interview subjects are asked for permission to record the conversation and consent is given for possible use of quotes. The option of anonymisation is also given to ensure confidentiality if desired[12].

3.3.3 Literature Review

A literature review on CE, policy, and textiles is carried out to get an overview of current research focusing on this topic. Material is gathered through the databases Scopus and WebofScience[13], as well as directly from the identified research hubs. This results in a small sample of literature necessitating that the core material span literature from outside of Sweden. From this material snowball sampling is carried out to continuously explore themes as they emerged within the empirical material leading to inclusion of secondary material such as organisational reports. Literature spanning beyond the field of textiles is included through this sampling process to provide better insights into the structuring forces within the field.

3.3.4 Review of Policy Related Documents

Material for reviewing the role of formal institutions and policy instruments are chosen based on their connection to the development of a CE for textiles within Sweden. This is done through the website for the Swedish government and the government offices which are scanned for documentation on CE by using the search function available. The resulting hits are reviewed and based on their relevance for the topic of CE and the textile industry policy documents are extracted (see table B).

[12] One of the interview subjects is anonymised in the following text and will be referred to as Interview 1.
[13] In total 14 relevant academic texts were found in the Scopus and WebofScience databases which was deemed insufficient as it did not provide information saturation.

Table B. Extracted policy related documents concerning the implementation of a circular economy. Policy material listed is material with direct mention or relevance for a CE and fashion. * Own translation. For original title see reference list.

	Swedish Government	**Swedish Environmental Protection Agency**
Policy Material	From Value Chain to Value Cycle: Goals for a Swedish Circular Economy*, (SOU, 2017:22)	Proposal on Management of Textiles: Report on Government Appointment* (EPA, 2016) Textile Recycling: Technical Feasibility and Challenges* (Östlund et al., 2015)

3.4 Limitations

The theoretical and methodological framework chosen for this thesis puts most focus on meta to macro levels of political institutions and R&D networks which are connected to large scale international companies. This means that the micro-level of individual actors or consumers is not sufficiently accounted for. However, as the focus of interest is the structuring forces within current developments within industry and formal institutions this is not seen as a significant limitation. In terms of the method of historical materialism adopted from the chosen theoretical framework, it relies on the works of others which complicates aspects of reflexivity towards the subject of study as well as the level of originality of the research. However, as much prominent work has been published for this purpose, it was deemed as an area were little could be added by the undertakings of this thesis. Of greater importance would have been to access a larger set of stakeholders as well as policy makers for interviews, improving insights from individual actors and providing stronger empirical evidence for the social context and ideas expressed.

4 Discussion

Reviewing the literature and interviews the overall most coherent and clearly expressed contradiction, or challenge posed to the status quo, is the necessity to intensify the use of products to decrease over-extraction of resources (Roos et al., 2015; Schmidt, Watson, Roos, Askham, & Poulsen, 2016; Watson et al., 2016). One output from the MFF consortium is the LCA assessment report by Roos, Zamani & Peters (2015) which is extensively cited throughout the reviewed literature. Key findings show that impacts are significantly higher within production relative to the use phase of garments and it highly stresses the necessity of prolonging the active use of fashion (Roos et al.,2015). Brennan et al. (2015) point towards the fact that overall demand for materials is expected to increase to such a degree that even within a circular system the stock of resources needs to increase to meet demand. Kant Hvaas (2016) highlights the same issue pointing to the necessity of strong reductions of consumption and promoting reuse[14] to replace production. The limiting factors of entropy and necessity of continuous material and energy inputs to a circular system must be taken into consideration.

Another key challenge to the status quo is the attention payed to strengthen smaller scale local circularity practices which can help nurture 'alternative forms of sociality and property relations engendered through the shared and redistributive economies […] and acts of repair and maintenance as political interventions' (Norris, 2017 p.14). One of the research programmes, RE:textile pays much attention on how to create such local capacity (A., Zethraeus, personal communication, March 21, 2018). In one of their outputs they stress that the CE should offer an alternative to consumerism and the classical market economy, which perpetuates the tendencies within a throwaway society (Pal, Carlsson, & Zethraeus, 2016) as described in the introduction of this thesis. Within the studied material these aspects of local practices of reuse and enhancement of material capabilities of communities was the most significant challenge to historical structures. The current globalised fashion value chain and offshoring of production has caused significant issues of unequal exchange and perpetuated power relations between actors within a globalised economy. Challenges to this system could offer opportunities for its re-evaluation and restructuring which could pose improvements of intergenerational equity and environmental sustainability. Evidence for efforts to promote reuse by

[14] From this point onwards in the discussion there will be a division made in terms of the reuse concept. Within the remainder of the text the concept will be divided in two kinds of practices, reuse and redistributive reuse. Reuse will point towards continued use by one individual while redistributive reuse will point to the continued use by consecutive users.

individual consumers and extended life of products through repair within a local context poses the strongest contradiction to the dominant practices within the fashion industry.

However, as will be explored in the following text the ways in which these aspects of a CE are to be pursued greatly shifts its potential. Hegemonic tendencies regarding material capabilities and motivations within the contextual foundation impacts potential for reductions in material throughput and alternatives for a sustainable transformation of production and consumption practices. The following text is presented in accordance with Cox's framework of structuring forces to see how the CE is conceptualised. Exploring how contradictions to the status quo run up against internal contradictions within the concept itself.

4.1 Ideas

The most important idea, which shape the social relations constructed through production and consumption patterns, is how CE for fashion strive towards decoupling through changes in conceptions of business models (see table C). Facilitating this is seen to be a shift in how the production and consumption relationship is constructed. This is often described to be a completely different way in which; consumers view the practice of ownership; the practice through which producers and companies interact and deliver products and services to their customers and also how they collaborate with each other (Bocken, Bakker, & Pauw, 2016).

Table C. Circular economy business models and strategies (Bocken et al., 2016).

Business model strategy	Definition / Examples
Access and Performance	▪ Leasing ▪ Sharing ▪ Clothing Libraries
Extending Product Value	▪ Remanufacture ▪ Take-back Systems to Store (EPR)
Classic long-life model	▪ Design for durability and offering repair services (often at higher costs of production)
Encouraging sufficiency	▪ Actively seek to reduce consumption through encouraging consumers to repair and offering services, warranties etc
Extending resource value	▪ Collection and sourcing of resources from otherwise 'wasted' materials
Industrial symbiosis	▪ Using residual outputs and wastes as feedstock into another process within geographical proximity

It is suggested that the intended use of garments should more strongly define the lifecycle and path of fashion and thereby define the choices made at the initial production stages (MFF, 2015). Within a CE the intended use and design decisions are thereby thought as affected by and affecting the intended value proposition and business model which is employed.

> It's when you decide to produce a garment that you decide: what is this? [...] Sometimes garments are produced to be used and sometimes garments are produced for the enjoyment of consumption, so to speak. [...] Why you produce a garment simply depends on the business model you have. (S. Roos, personal communication, March 19, 2018)

Roos here points towards the possibility of considering aspects of use at the initial design stage to get away from the mentality were consumption is facilitated for the sake of consumption itself. An important aspect of CE business models thus centres heavily around the initial stages of the production process for both reuse and recyclability. This approach, Goldsworthy (2013) means, places the designer at the centre of the solution. Indicating what collective images of social relations and order is prevalent within this given context.

4.1.1 Business Models and Agency

The importance placed on companies shifting their business model is rationalised partly through the fact that this is where the largest environmental impacts occur (Roos et al., 2015). According to MFF (2015) up to 90% of the environmental impact of clothing is locked-in from decisions made in the design phase. The second part of the argument is based in the above presented ideas were intended use and design qualities are seen to have a direct impact on possibilities and willingness for reuse. The role of the consumer is thus mostly theorised based on their role in the overarching functioning of a circular production system. The engagement by consumers within this narrative is enacted through: changes in disposal patterns (Goldsworthy, 2013); bringing back products to companies at end-of-use (EOU) (Fischer & Pascucci, 2017); consuming circular products or services (Steensen Nielsen & Gwozdz, 2018); and consuming emotionally satisfying products with stronger appeal to the individual (Niniimäki, 2017). There is acknowledgement that societal norms of consumption and production practices need to shift (Pal et al., 2016; Watson et al., 2016). However, the importance of consumer participation is mostly viewed as a pre-requisite for business models.

Thus, focus on constructing a new type of consumption and production system pushes the conversation towards how different forms of consumption can be facilitated. This is evident within one of the interviews as it becomes clear that the ideas surrounding the inescapable necessity of reducing rates of consumption is not conceptually discussed with fashion companies (A., Zethraeus, personal communication, March 21, 2018). The characterization of the producer and consumer relationship makes clear that agency and power to affect this transition is perceived to lay mostly with designers and producers through their engagement with circular practices and business models. However, there is not only agency but also responsibility placed on producers in terms of the decisions made of what is to be produced, from what materials it is produced, and how it is produced (J., Larsson, personal communication, March 23, 2018). The above illustrated focus on producers within the material strives to find motivations for the industry to change though I argue that focusing on producers as a main enabler for systemic shifts acts to reinforce current structures of power. The power situated with

producers placing garments on the market and the intended value proposition which *act upon* consumers and their consumption habits is a highly de-politicising idea of consumers.

4.1.2 Value Propositions and Reuse

The success of CE business models is perceived to be dependent on ensuring a long technical lifetime of garments (Watson et al., 2017) as low quality leads to loss of fit, size, or colour which ensures early disposal (Niinimäki, 2017). This is an undisputed issue within fast fashion products but does not make up the entire picture. Increasing technical lifetime does not ensure reuse as explained by Fletcher (2017), since clothing disposed of 'endure physically long past their period of use' (p.6). Within the empirical material studied the perception is that designers and producers have a significant opportunity to impact sustainability by ensuring a long active use through design by manoeuvring emotional aspects of attachment, satisfaction, and trust (Bocken et al., 2016; Goldsworthy, 2013; MFF, 2015; Niinimääki, 2017; Pal et al., 2016). Niinimäki (2017) claims that companies need to establish a deeper connection to their customers and the 'company has to know the end user and his/her needs and desires much better' (p.152). Similar ideas around this relationship was expressed by RE:textiles project manager:

> There's a connection to the idea of selling garments that have high appeal, that as a customer feel like 'this is me' and you want to keep it for a long time. […] That can probably help this circular approach because then there's perhaps stronger incentive to mend and upgrade. (A., Zethraeus, personal communication, March 21, 2018)

Research outputs from MFF of consumer practice and habits additionally shows that consuming fashion plays a role in consumers perception of increased well-being and satisfaction (Gwozdz, Gupta, & Gentry, 2015). These areas are therefore seen to be necessary to explore to see how the idea of quality of life enhancement can be utilised as a trigger for sustainable consumption practices (MFF, 2015). Hence, the practice of redistributive reuse, through alternative business models, would maintain the historical structures in a quest for the 'variety of individual constructs' of well-being and quality of life that Swedish consumers perceive to attain through the practice of fashion consumption (Gwozdz et al., 2015 p.130). Reasons for why such strong associations exists between commodity consumption and individual perceptions of well-being is not questioned within the examined material, rather held as an important factor in social life (EMF, 2017; Gwozdz et al., 2015). This is here not held as a false claim but the level of importance it has come to play needs stronger challenge. As Fletcher (2017) showed with her ethnographic study it is not the design or the garment itself that is most

influential for pro-longed use 'but the practices performed by the person using that product' (p.7). Within her study she also draws from Hansen's (2003 cited in Fletcher, 2017) findings that indicate that it is not the objects themselves which have a social importance, but that social life has importance for objects.

Consumption has become an integral part of individual identity, self-realization, and meaning (Harvey, 1990) however its collective meaning within fashion is upheld by continuous acts of consumption (Kawamura, 2011). Without consumption it loses its meaning, creating a 'catch 22' and the basis for the oxymoron which is sustainable fashion. If these values are to be upheld as part of social activity and not be questioned in terms of their validity, they also will depend on the continued consumption practices of the collective to uphold their meaning (Kawamura, 2011). The development of fashion diffusion through initially seemingly collective images of what is desirable to increasingly differentiated and individualistic motivations (Kawamura, 2011) does not necessitate that the fundamental relationship to the fashion object is different. This does not challenge core ideas or values projected on consumable goods leading to the practice of over-consumption in the first place. As pointed out by Harvey (1990), the development within capitalist practices of accumulation during the past 60 years have formed specific structures for the relationship between consumption and production. The shift in focus from the production of goods to the provision of more ephemeral services by fashion facilitates the speed up of turn-over and thus increases opportunities for capital accumulation (Harvey, 1990). This is very much in line with Kawamura's (2011) definition of the fashion system[15] which has become a distinct system for fashion diffusion within industrialised western societies based in historical developments at the start of the 20th century. Forming an emotional connection or a stronger sense of identification with a piece of clothing as being representative of some form of personal quality is not found to promote any reduction in consumption or pro-longed use through reuse practices. Instead this type of attachment is more likely to lead to accumulation and storage (Chapman, 2005 in Fletcher, 2017) making it an insufficient challenge to the status quo.

4.1.3 Decoupling Through Service Growth

Despite the weak challenge posed by shifts in value propositions, redistributive reuse and recycling is upheld in the reviewed material to provide potential for breaking with increasing rates of resource use.

[15] According to Kawamura (2011 the fashion system is the social and cultural system through which the fabricated cultural phenomenon of fashion becomes applied to clothing and apparel. This value is created through social interactions and collective practices within a where production, distribution, and consumption come together in creating this value.

By maximizing the sales per product, economic growth is seen to be achieved through a more stable stock of materials (Pal et al., 2016). The limits to this have already been pointed out but how these ideas are addressed within the material needs to be recognized to discern internal contradictions or contradictions to historical structures. The purpose of what business is supposed to achieve is here again called into focus by Pal et al. (2016) as they stress that a shift is necessary in the values which guide fashion companies' actions. A common line of thinking within the material to promote social sustainability is described as occurring in industrialised countries through increased employment within collection, repair, remake, and recycling practices (EMF, 2017). Promoting decoupling of material use in the industry is heavily focused on the 'business case imperative' (Strähle & Philipsen, 2017) to secure future resource supplies (see section 4.2). On the topic of decoupling, ideas of remaining competitive and securing profits becomes increasingly visible as core internal drivers of CE practice. Here illustrated by Larsson:

> You have to separate between consumption and consumption because there is consumption of textile fibres and that needs to cease, it doesn't work. But on the other hand, consumption [as in] flow of money, must increase because otherwise our society will not function. We must increase our consumption of money, but we must stop our consumption of materials and that thought [companies] are on board with. That idea works. (personal communication, March 23, 2018)

This quote shows the assumptions of the necessity of some aspects of current market formations and the explicit proclamation of the idea that growth is an inevitable prerequisite for development. Here Weissbrod & Bocken's (2017) study within a large fashion retailer becomes relevant. Their results show that a dominant economic rationale for introducing experiments using CE business practices led to low level of success. The overarching sustainability goals and values for pursuing sustainability in a larger context both internal and external to the business was not discussed. Instead business risk management was of greatest concern, which led to minimal implementation.

The necessity of forming a strong understanding of the fundamental goals and conceptualisations of ethics, equity, and equality is nothing that is conceptually given within CE, or even discussed as seen within the engagement between companies and RE:textile. The importance placed on economic and market functions has the consequence of concealing, and de-politicising, the uneven distribution of power within the global market in managing and benefiting from its formation and structures (Newell, 2012; Van Apeldoorn 2003). Thus, entrenching the status quo and current issues within the industry.

The necessity to find a different way of conceptualising the structure of the market economy was expressed in interview 1 (personal communication, March 3, 2018).

> There is a vacuum for something else than a market economy and we do not know what that other should be. Then it feels relevant to work with sustainability and economics at the same time. Could [CE] be a solution?

Going further the interviewee answers the question on their own.

> Personally, I don't think that this is the revolutionary solution, but it is one of the things that we can do to address our sustainability issues. But it is absolutely not *the solution*. It's more like a way of working that perhaps can make our production [more efficient]. That's how I see it, somewhat better resource management. (Interview 1, personal communication, March 3, 2018)

After reviewing the empirical material, I concur with the above statement. The increasing focus on performance, sharing, access, and service provision is simply a continuation of already existing practices and historical developments that enable structures of continued capitalist accumulation without posing any strong contradiction. These collective practices uphold the social forces perpetuating over-consumption and over-production. This contributes to the issue identified by Brennan et al. (2015) where any efficiency gains are outpaced by increases in consumption, rebound effects.

The ideas of economic growth and the need for it holds legitimacy despite limiting factors of entropy. The notion of planetary boundaries is supported throughout by actors and writings from MFF and RE:textile as well as within the extended body of research connected to the field. However, when discussing actual practice or implementation of circular ideas this facet of ultimately limiting factors is less explored. Rather the possibility of a 'win-win-win' is present where all areas of sustainability, economic, social, and environmental, can be accommodated at the same time (Pal et al., 2016). However, there will be a trade-off to manage if environmental and social aims are to be achieved though the economic rational takes priority within this concept which perpetuates shared notions of its necessity and the expectations placed on the production and consumption system to provide it. This results in a heavy focus on aspects of material capabilities necessary to support a CE system and maintaining material flows.

4.2 Material Capabilities

This section will deal with how the material capabilities of the fashion industry are utilised and envisioned for a fashion CE to reuse and recycle garments. In the material future restrictions to these capabilities to secure access to fibres and textiles despite increases in demand is considered (Strähle & Philipsen, 2017). Additionally, risk management strategies are mentioned to stay ahead of the curve of possible policy interventions which might impact the way companies can access resources and do business on the global market (Stål & Jansson, 2017). However, this is not only some future risk but a current condition as markets for fibres are unstable and prices volatile (EMF, 2015; Trucost, 2013 in SOU 2017:22), private imports of fashion increases (S. Roos, personal communication, March 19, 2018), and margins are tight making it difficult for companies to remain competitive (A., Zethraeus, personal communication, March 21, 2018). The fact that private import, e-commerce, and globalised competition within the fashion industry is growing creates a situation where national actors, whom ones held more control and power over their ability to create profit, are in some ways fighting to maintain it.

As expressed by Zethraeus (personal communication, March 21, 2018), 'most companies are scared to death of this reality'. The reality of the increasingly unavoidable fact that current practices increase the necessity of addressing over-consumption as it creates additional infringement on their ability to make profit. In such conditions the CE could be seen as a form of creative destruction within the industry itself, where new practices of accumulation are sought through innovation and investment at the expense of past investments and structures (Harvey, 1990). The debate on of how to enact this thereby often surround the possibilities of putting in place a collection system, technological developments in terms of recycling, and the systems financial feasibility and viability (Carlsson, Torstensson, Pal, & Paras, 2015; Östlund et al., 2015).

4.2.1 Ideal System for Material Management 'Light-Years Away'

The ideal measures of implementation of a textile CE is envisioned to be a closed-loop system, much in line with the EMF model of a circular fashion industry[16] (EMF, 2017). Even though reuse of garments

[16] The EMFs conceptualisation stresses the win-win-win scenario of CE implementation which is ultimately stimulated through the economic growth a CE can provide (EMF, 2015). EMFs model is a closed loop system where any additional inputs ideally come from renewable sources, meaning renewable energy and bio-based

is held as the most important goal within this ideal implementation, a closed-loop system automatically necessitates the ability to recycle and circulate materials within the industry itself to secure resource access and minimise leakage of these resources from the system (EMF, 2017). Research outputs from MFF argue that fibre-to-fibre recycling would have stronger environmental benefits than downcycling, an open loop system, as the quality of the fibres are through downcycling degraded and the overall value of the resource lowered (MFF, 2015). Ideas from McDonough and Braungart (2002) are enforced as downcycling is viewed as only delaying the linear flow of materials. Further, the need for fibre-to-fibre recycling is held as an important goal using the rational that downcycling does little to offset the demand for virgin fibres and does not improve the performance of the textile industry itself (MFF, 2015). One of the main aims of a CE is to maintain the value and a certain level of quality of a stock of resources for as long as possible within the economy. This logic dictates that an optimal CE system would strive towards fibre-to-fibre recycling.

In the technical report (Östlund et al., 2015) prepared for the EPAs inquiry into improved handling of textiles (See section 4.3.3) it was found that at current levels of technological feasibility for fibre-to-fibre recycling a material loss of 40% is caused when recycling cotton, wool, or acrylic fibres and virgin material input is necessary. On the other hand downcycling only result in 20% material loss[17] (Östlund et al., 2015). Negative aspects with downcycling is that the material quality would be reduced to the point where it would not be possible to recycle into new material again but if actual replacement of resource extraction can be achieved it is at present a more desirable option. Despite any technological innovation fibre-to-fibre recycling, especially of bio based fibres, is only likely to be achievable very few times due to entropy (Östlund et al., 2015). As pointed out by Zink & Geyer (2017) a dissipative reuse, were resources cascade within the economic system, is not inherently less good than circular, as long as the end result is displacement of virgin resource extraction. If circular practices are continuously viewed from a measure of economic value despite having the same possibility of leading to displacement possibilities for change is undermined. Additionally, according to Östlund et al. (2015) fibre-to-fibre recycling is still virtually unheard of and as stated in interview 1 (personal communication, March 3, 2018) achieving a similar quality of recycled fibre to virgin fibre is 'light-years away'. Even though it could pose an important potential solution in the distant future, it becomes

materials. The model is inspired by the differentiation made within the C2C approach between a biological nutrient cycle and a technological nutrient cycle where different management approaches are created towards renewable materials and finite stocks (EMF, 2017).

[17] Östlund et al. (2015) found that reductions of 0,5-3 kg of CO2 equivalent per kg of textile waste could be achieved through recycling which is a relatively small gain in comparison to the emissions caused by production where emission levels span 10-40 kg CO2 equivalent per kg.

important not to overstate the promises of recycling to make significant reductions in material consumption and overall resource use. Recycling practices often require high energy input and may result in increases in transportation and its consequent emissions (Sandin & Peters, 2018). These findings also apply for certain reuse and life-time extending practices within a textile CE especially considering the increase of transportation necessary to facilitate sharing or collection of EOU or EOL products (Roos et al., 2015). Though even if the replacement rate of reuse practices make up only one out of ten newly produced garments it still provides significant environmental gains in comparison to recycling or incineration (Schmidt et al., 2016).

4.2.2 Local Practice and Global Production System

Studies reviewed by Sandin and Peters (2018), engaging in LCA and environmental gains achieved through CE practices, assume a 1:1 replacement of a circular garment and a garment produced under the status quo. By doing so studies highly underestimate the rebound effect and brushes over the necessity of ensuring actual displacement of virgin resource use (Sandin & Peters, 2018). As already shown the majority of environmental impacts occur within the production phase. Meaning that even though 1:1 replacement of virgin to recycled fibre takes place, current structures of fashion production and the slow progress in improving them is not addressed.

> [E]ven if you recycle the fibres into something new you still need to spin the yarn, you still have to weave it, you still have to dye it which has the biggest environmental impact, and you still have to sew. Then you haven't really saved that much environmental impact. (S. Roos, personal communication, March 19, 2018).

To address these relationships stronger support for reuse practices and local capacities is necessary. Here expressed by Larsson:

> […] because it seems like for CE to be environmentally friendly and if it is to support society you need to have local [loops], you cannot ship the clothes away over half the globe again for sorting and remake. It must be done locally, that I'm pretty convinced of. (personal communication, March 23, 2018)

However, as increasing levels of material circularity involving recycling and production is imagined, engaging with higher levels of spatial scale, sustainability objectives become more difficult to maintain.

For example, the current conceptualisation of local and global loops within the discussion keeps relationships of large-scale production in place.

> […] we have only thought about how we should develop [the local systems] and get them to work but we haven't related that to the larger system really, we have more seen the larger system as a supplier, a material-supplier so to speak. (J., Larsson, personal communication, March 23, 2018)

The ideas of local and smaller resource loops become reserved for practices of reuse and repair as there are little to no production capabilities within Sweden[18]. Current location of production, with lower environmental legislation and labour costs, and other material capabilities in terms of access to natural resources create market advantages by offshoring production (Newell, 2012). Continuing the reinforcement of negative impacts within the value chain. Without a significant increase in practices that has the effect of replacing the production of new products these relations would be in no way challenged by the CE concept. A complete contradiction would be to support local communities and smaller loops of material circulation, regardless if that would take place in Sweden or anywhere else in the world. Reducing transportation, emissions, and facilitating greater engagement and connection of people with practices and means of production. However, the interconnectedness and complexity of the global fashion value chain is unlikely to be retracted and the success of the Swedish fashion industry is continuously gauged within a global market through CE.

4.2.3 Increasing Collection Rates and Coercive Laws of the Market

To create a circular system would also require significantly increased rates of collection of EOU and EOL garments[19] (Carlsson et al., 2015). RE:textile performed a feasibility study of a textile collection and recycling system in Sweden and found that technology for automated sorting and detection of unaccounted chemicals within collected material need to be developed to be able to make the system financially viable and reach the scale of collected material necessary (Carlsson et al., 2015). Here aspects of design is more related to the actual material and construction qualities of fashion in relation to their durability, repairability, and modularity (Pal et al., 2016). Setting material standards and

[18] The fact that Sweden produces less than 0.4% domestically of clothing and household textiles (Elander et al., 2014 in Elander et el., 2017) shows the low capacity of production in the country.

[19] An example illustrating the difficulty of accumulating enough material is the company Houdini which became a customer and partner with Teijin in 2006 and by 2012 still haven't managed to accumulate enough EOL polyester from their customers to be able to send this back to the factory in Japan for recycling (Tojo, Kogg, Kiørboe, Kjær, & Aalto, 2012).

requirements for products would enable access to information regarding the material composition of the garments making collection and sorting more efficient (see section 4.3.1) (Elander, Tojo, Tekie, & Hennlock, 2017).

Such a collection system could pose an opportunity for reuse as well, as Hultén, Johansson, Dunsö, and Jensen (2016) found trough sampling of solid waste streams in Sweden. Half of the textiles discarded was in very good condition and well-suited for reuse. Meaning that there are large possibilities for increasing the collection and continued use of these garments. However, the high costs of labour in Sweden, and the manual intensity of collection and sorting, combined with the low price of virgin fibre creates low economic incentives to utilise recycled fibres and limitations for an expansion of businesses engaging in textile collection, and sorting for both reuse and recycling (Hvass, 2016; Ljungkvist, Watson, & Elander, 2018). Ljungkvist et al.'s (2018) study of market dynamics for collection and sorting practices aimed for both second-hand and recycling found that the increase of collection rates would rather increase pressures for fibre-to-fibre recycling. The study found that policy developments within the larger setting of the EU in combination with global developments for restrictions to exports of garments outside the European market has resulted in historically low prices for the collected material as there is no demand for it (Ljungkvist et al., 2018). Collectors are finding it hard to finance their operations and find a market for the material. Additionally, only the highest quality material, circa 10 to 15 percent of the collected garments, was deemed to be possible to sell on the Swedish market with little prospects of increase in these numbers (Ljungkvist et al., 2018).

Thus, as collection rates increase due to policy developments the European market becomes saturated with reusable collected textiles which are not in demand due to low quality or simply because virgin fibres are cheaper creating a situation where increasing rates of material is 'forced towards recycling' (Ljungkvist et al., 2018 p.4). Contradictions within the material becomes evident as significantly higher rates of collection is deemed to be necessary for a circular system to be financially viable and be able to supply the industry with a sufficient amount of material to meet demand for production (Carlsson et al., 2015; Hvass, 2016). At the same time there is no market for the collected material, as practices of reuse are low and collection, sorting, and recycling costly. Doubled collection rates within Sweden was not expected to cause significant effects for this relationship but doubling across Europe was perceived by collectors to have significant negative effects on both quality and price of collected material (Ljungkvist et al., 2018). Seeing that only downcycling is possible at present, resulting in low preservation of economic value, this heightens motivations towards improving fibre-to-fibre recycling technologies (Ljungkvist et al., 2018). The 'coercive laws' of market competition creates desire to

leapfrog through technological innovation and regain competitiveness within the global market (Harvey, 1990).

4.2.4 Dominant Mode of Production Unchallenged

As the text above shows CE practices are more labour intensive and thus more costly creating a situation where circular business models are reliant on a system of material flows that operates at high labour productivity, is standardised, has production repeatability, and is highly efficient (Pal et al., 2016). Meaning all the fundamental building blocks for how material capabilities are managed within a fast fashion system but adapted to meet requirements for circularity. Tight margins of production and time pressured lead times result in offshoring to keep costs down (EMF, 2017). The hegemonic order of the market economy would thus likely continue to support the dominant mode of production and its principles of maximising margins and profits. Without such conditions a circular fashion system is not seen to be financially feasible or viable to compete on the market with fast fashion products (Carlsson et al., 2015; Lewis, Park, Netravali, & Trejo, 2017) which makes sustainable practices difficult to support using the CE concept.

4.3 Institutions

The CE concept comes up against resistance within market conditions as they better cater to the needs of a fast fashion system. As described this affects the ability of the CE concept to make strong challenges to over-consumption and over-production practices. The way material capabilities and distributions of exchange within a globalised value chain is managed is not much different as technological and financial feasibility poses limitations for implementation. Fischer and Pascucci (2017) points out that institutional structures that co-developed with the linear system causes significant barriers for CE implementation.

Often the difficulty of implementing CE practices is explained through market failures (Elander et al., 2017; Watson et al., 2017). This is seen to place disadvantages upon CE practices as virgin fibres and the cost of production is cheap, explained through the lacking capacity of markets to internalise their true environmental cost. To change this, it is seen within the reviewed material as crucial for formal institutions to directly impact market structures through policy. Large scale changes are seen to be necessary to provide institutional support for reuse practices, services, and design principles which are upholding material and product qualities (Pal et al., 2016). I will in this section take a closer look at how these issues are characterised and imagined to be addressed through formal institutions.

4.3.1 Sustainable Fashion a Barrier to Trade

To make it easier for circular business models to compete with fast fashion business models polices are suggested within the reviewed material directed at fibre use and material standards (Elander et al., 2017), state funding for circular start-ups (Pal et al., 2016), reduction in labour costs for repair, remake and other service-based business models (Watson, Gylling, & Thörn, 2017), and targets for collection, reuse and recycling rates either through voluntary take-back systems or a mandatory extended producer responsibility (EPR) system (Watson et al., 2015). Most of the suggested policies are dependent on higher levels of institutional change where EU legislation and directives would need to be amended or new policies implemented. As these types of policies would directly impact business strategies there is a preference for voluntary measures and step-wise introduction of new rules and regulations (Elander et al., 2016). Mandatory measure is seen to pose high risk to be subjected to intense lobbying or capital flight as companies relocate (Bigano, Śniegocki, & Zotti, 2016; Elander et al., 2017).

For example, implementing policy for material or product specific standards to improve environmental performance require EU-level policy implementation. The low material standards of fashion is seen as an inhibitor for both reuse and recycling as certain circular principles for material and design standards need to be upheld to enable a closed-loop system (Elander & Ljungkvist, 2016; Pal et al., 2016). Both as it pose practical barriers for recycling but also as it would enable lowering of the environmental footprint of fashion through setting standards and restrictions for material and chemical use (MFF, 2015). To enable recycling, use of hazardous chemicals both for human and environmental health would need to cease or be placed under much stricter regulation throughout the global value chain to make sure that they do not accumulate within the system. For a CE, toxic free material streams is seen as a prerequisite (Östlund et al., 2015). This results in a need for significant engagement with international institutions in developing and harmonising such standards. Though, if standards are not agreed upon at EU-level they could be considered as barriers to trade between MSs and directly violate the free flow of goods within the internal market[20] (Bache et al., 2016). Seeing that the Swedish fashion industry is completely dependent upon international trade, such legal frameworks are of great significance for what power Swedish policy could have in this regard. There have been precedents for

[20] 'The internal market comprises an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured. Therefore, the prohibition of quantitative restrictions on the movement of goods and of measures having an equivalent effect is one of the basic principles of the Union'. (Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 on Laying Down a Procedure for the Provision of Information in the Field of Technical Regulations and of Rules on Information Society Services)

product policies though a case must be made that the requirements are in place for environmental improvement within the MS and do not skew market conditions in the MS's favour (Bache et al., 2016). Two things become important to consider. Firstly, environmental impacts are insignificant within Swedish borders in comparison to those in producing countries (Roos et al., 2015). Setting standards for products based on environmental impact thus becomes difficult as Sweden does not have a strong case in this regard on its own. Secondly, textiles are not in any way a critical material or a problematic waste stream where risks are high and where depletion of materials is immanent in the same way as has been identified for other industries. Thus, it is not singled out to be of strategic importance for competitiveness within the internal market. Setting rules for products, ensuring higher levels of environmental standards, run the risk of being interpreted as a barrier for the free movement of goods.

4.3.2 Collection Systems and Extended Producer Responsibility

Despite the contradictions caused by increased collection, policy instruments concerning rates of collection, reuse, and recycling are still a crucial part of a circular system to support the maintenance of a stable stock of resources. Together with perceived market failures barriers are here also identified for reverse logistics, where material is collected and redistributed for further use or recirculated as a secondary raw material. This is seen to be hindered by confusing ownership structures for collected textiles (EMF, 2017). Currently, textile waste is categorised as municipal solid waste (MSW) and is according to the Swedish environmental code the responsibility of municipalities to manage and external actors can only manage this type of material flows on the authority of the municipality (EPA, 2017). Companies can without hindrance collect clothing and textiles if they clearly state that the collected material is intended for reuse and therefore can be reasonably assumed that the holder intended it to be reused and not discarded as waste (EPA, 2017). To increase rates of reuse is therefore not seen as an issue in this regard. To increase the use of textiles once labelled as waste is however more complicated.

However, the voluntary nature of current collection, or take-back schemes, carried out by fashion companies make them more complex as there's a wide range of actors involved with no defined code of conduct and improvements are difficult to enforce (Pal et al., 2016). Additionally, voluntary take-back systems run the risk of legitimizing increased consumption due to perceptions of the debatable positive effects of recycling (Stål & Jansson, 2017). This is a risk which is posed by many voluntary measures given lack of transparency and pressure for swift and effective change (Hobson, 2013 in Stål & Jansson, 2017). In Sweden brands such as H&M, Gina Tricot, or higher end brands such as Filippa K, have such a system in place. As there are no formalised collection infrastructure the voluntary nature

of take-back schemes persists in contrast to other products such as electronics or home appliances (Pal et al., 2016). Larsson (personal communication, March 23, 2018) expressed the importance and likely implementation of a formalised collection system and…

> …a really good recycling system and producer responsibility as there is for packaging. That H&M has to pay for the trash they [import] and that it should be possible to take care of. […] Because it won't work when the countries that get the clothes right now, they don't want it anymore, so someone needs to take care of it and that will need to be done locally.

Current international developments are here reflected as the perceived need for improving national and EU level management is driven by market conditions as demand for collected materials goes down and supply goes up (see section 4.2.1). Formalised collection could be supported through an extended producer responsibility (EPR) system, which lies within MS competencies to instate (Directive 2008/98/EC). EPR is one of the more commonly mentioned policy instruments within the reviewed material to achieve a formalised and coordinated collection system which is also part of the EPAs (2016) suggestions for improving textile management in Sweden. The EPAs proposal focuses on waste prevention and the report forms one side of the debate reviewed within formal institutions. The other half is represented by the SOU (2017:22) as it brings together motivations for overall consumption reduction within the Swedish socio-economic system. Together they offer some insights into a CE system for fashion viewed through formal institutions.

4.3.3 Environmental Protection Agency: Proposal on Management of Textiles

I will start with the former of the two documents as it deals specifically with the textile industry. The goals set within the proposal is that by 2025 the amount of textile waste found in residual waste should be reduced by 60% in comparison to 2015 levels. Additionally, 90% of textiles collected separately should be prepared for reuse or recycled, preferably fibre-to-fibre, applying the waste hierarchy principles (EPA, 2016). To reach these goals the EPA stresses the need to shift production and consumption practices and better manage EOU and EOL textiles. The former the EPA envisions to achieve through; open dialogue between business and government agencies to increase possibilities to work on common objectives in an international context, thus strengthening the potential for influencing the political direction at higher levels of governance; the government providing financial

support to CE businesses and start-ups[21]; the government assigning responsibility to the Swedish Consumer Agency to provide information to consumers on sustainable consumption. The EPA also takes the position that market failures are the main problem inhibiting consumers from making a 'rational choice' (EPA, 2016). As part of their proposal they performed a pilot study within the fashion industry and found already high levels of knowledge but little action (EPA, 2016).

For management of textiles the EPA suggests two options which they see as having the same environmental benefits. Firstly, they suggest the distinction of textiles as a separate waste stream where it becomes mandatory to separate textile waste. The responsibility of managing the waste would still lay with municipalities. The second option is the implementation of an EPR which would require amendments to the environmental code and waste regulations. As with the Swedish pant system, any actor who first places a product on the Swedish market is responsible for ensuring that this product is connected to a certified collection system setting targets for diversion, reuse and recycling (EPA, 2016). They stress that such an EPR system could not stipulate anything regarding material or product design due to the upholding of free movement of goods on the internal market. Throughout the proposal there is a tendency to lean towards measures of a voluntary nature where the role of the EPA is more to set directives and targets and less to provide clear frameworks for how they are to be achieved.

The EPA deems it highly likely that textile companies would form material associations which would manage the collection for them[22]. Such an arrangement gives the producers the opportunity to collaborate with those actors deemed most appropriate for their operations (EPA, 2016). However, Fischer and Pascucci (2017) brings attention to a key concern for such a shift as they suggest that stakeholders 'should find ways to introduce institutional mechanisms' for shared ownership 'rather than accommodating large amounts of materials at a few large stakeholders, such as a material bank' (p.27). Providing such institutional insurance is not brought up in the reviewed material. The EPAs suggestion is further critiqued by Elander et al. (2017) as it pays no attention to upstream effects of production. The suggestions for policy mixes and requirements that Elander et al. (2017) give to strengthen such action are dependent on EU-level product or material standards.

[21] Found in SOU 2017:22 to not be a necessary policy as they found that this type of support already was sufficiently implemented.
[22] Such a system would however need to be certified by the EPA to ensure safe management (EPA, 2016).

EPRs are nothing new and forms of EPR have been in place in Sweden since the early 1990's[23] which have had a significant impact on recycling rates in the country (Kalmykova, Rosado, & Patrício, 2016). However, for an EPR to achieve the necessary reductions of material consumption within the socio-economic system evidence is weak (Bukhari, Carrasco-Gallego, & Ponce-Cueto, 2018). As shown by Kalmykova et al.'s (2016) study of EU, and Swedish national and local scales of resource consumption, between the years 1996-2011, these types of EPRs had no impact on decoupling economic growth from material consumption. The EPR described by the EPA do not differ from the examples of EPR characteristics listed in Tojo et al. (2012). These characteristics refer to literature published in 2004, 2001, and 1992[24]. Indicating that little has changed in the core principles of this type of system and the CE concept has done little to influence the underlying rational. The EPA (2016) themselves point out that possible improvements are highly uncertain.

Overall the EPR and the measures for shifting production and consumption practices are insufficient in supporting CE practices which offer the strongest contradiction to the status quo. It rather exacerbates internal contradictions caused by increasing rates of collection as shown by Ljungkvist et al.'s study (2018). However, referral to such contradictions is within the EPAs report posed as positive where market mechanisms are driving further implementation of the waste hierarchy through innovation (EPA, 2016). Even though as seen in section 4.1 such market mechanisms exacerbate historical structures and section 4.2 show that such innovation is far off in the future in terms of providing solutions for current issues.

4.3.4 From Value Chain to Value Circle: Goals for a Swedish Circular Economy

Where this line of reasoning leaves us with the EPAs proposal is very much one of the driving points within the SOU (2017:22) where innovation, technological developments, and business entrepreneurship are perceived to enable Sweden to remain competitive in a global context. Consistent with the rest of the empirical material the SOU (2017:22) points towards business models as key enablers for a CE and that policy needs to strengthen capacity for market competition. As Sweden is not able to compete in terms of low production prices or cheap labour the aim is to be able

[23] According to Tojo et al. (2012) the government assigned the EPA to investigate the possibilities for a textile EPR system in Sweden already in the early 1990's. The authors refer to Report nr 4507 published by the EPA in 1995 but I was unable to find this report on the EPA website or through online search engines. I attempted to contact relevant actors within the EPA to gain access to it but was unsuccessful.

[24] In their report prepared for the Nordic Council of Ministers in 2012 Tojo et al. refer to Tojo's (2004) use of Lifset (1992), OECD (2001), Stevens (2001), and Walls (2004) to summarise characteristics of EPR policy instruments.

to compete by lowering costs for service-based businesses. Solutions specifically mentioned directed at fashion consumption is offering tax cuts on labour for services which enable prolonged or intensified use of products. This line of reasoning is in accordance with the ideas explored in section 4.1, and thus offers little of a challenge to the nature of over-consumption practices or the social drivers for them. The most preferred suggestion is to shift the structures of VAT where the taxation on labour is to be lowered and increased for materials to stimulate the consumption of services rather than materials (SOU 2017:22). Such shifts of the VAT are also prohibited at EU level. They therefore suggest a broad tax to be placed on all consumption goods brought onto the Swedish market by professional actors and does not suggest specific targets for textiles[25].

The CE is seen within the SOU to provide better accounting of natural resources within a neoclassical national economics perspective (SOU 2017:22). The CE is here explicitly claimed to in no way pose an alternative economic theory (SOU 2017:22). The report states that monetary capital is already circulating within society as payments and is not of interest for the concept as it is applied within this report. They stress that a CE is simply a new tool to better incorporate efficient use of resources in the already existing structures of the economy. By completely sealing off any considerations to an alternative to the capitalist market economy, in the very way the SOU defines a CE, shows a strong positioning to not question the importance placed on economic growth for the development of society. Environmental insecurities, leading to disruptions in economic sustainability and viability of businesses, has led to an increasing awareness within governance of perceived political risks posed for the European economy (SOU 2017:22). Much like the motivations described in section 4.2. However, for the Swedish context the inquiry does not consider this as a convincing argument for an isolated nation to consider on their own. They do not oppose this line of reasoning but argue that there are no circumstances where a nation can on their own develop a CE without complete cooperation with other countries on a global scale (SOU 2017:22). Which in no way negates the first proposition only that such risk management should be carried out within national governance by ensuring that Sweden remain relevant and competitive and the aim is to develop the solutions that are seen to become vital within the global context (SOU 2017:22). As Thidell (personal communication, March 5, 2018) points out, there is nothing which says that developments and solutions created in Sweden must be implemented here. The CE is seen as one of the prime targets that a significant number of nations[26] and actors on a

[25] Though the formulation of such a tax also runs the risk of being no different than a value added tax and is likely to meet the same restrictions as for value added tax (SOU 2017:22).

[26] Finland, Germany, the Netherlands, Japan, and China are all mentioned within the report as they all are developing CE policies.

global level are striving for. Developing innovations and technological solutions for a CE is perceived as a conscious and strategic move and the SOU (2017:22) stresses that Sweden as a nation should focus on areas where it has strong competences to be able to stay competitive. For the Swedish fashion industry this would mean those competences which lie prior and post production processes, dealing with such aspects such as design, pattern constructions, material developments, textile engineering, developing recycling technologies, retail, consumer nudging, or business models. Which aligns with the focus within the reviewed material.

Such political ambitions would, much like the previous discussions, strengthen the formations of the global supply chain where unsustainable production and consumption relationships meet no institutional opposition. The 'coercive laws' (Harvey, 1990) of the market make themselves visible within the SOU (2017:22) as it stresses that a significant factor to take into consideration is that environmental laws should not disadvantage Swedish companies. Which exacerbate institutional barriers to implement policy which directly manage environmental impacts occurring due to Swedish consumption patterns beyond its borders. Swedish policy for improving environmental sustainability is focused on the national setting (see appendix C). There is a perceived difficulty to apply Swedish environmental legislation to business operations dependent on production outside the nation's borders which is acknowledged within the SOU (2017:22). While maintaining the initial position of not disadvantaging Swedish companies. In the report CE practice is seen as a way of addressing such issues by enforcing the dependencies and collaboration within the productive system. This could be a conducive development for improving sustainability. However, the focus on economic motivations and the competitiveness of business in the application of CE principles for reducing impacts creates conflicts of interest, and as seen internal contradictions.

The SOU (2017:22) deals with this difficulty not by strengthening institutional means for increased collaboration but rather points out that environmental taxes and fees, according to environmental economics, should be exerted as close to the source of pollution or emission as possible. Which is a reasonable point. However, they go on to question what responsibility Sweden or Swedish consumers really should have over the environmental problems occurring in China or Vietnam caused by the sweater we buy (SOU 2017:22 p.163). Rather they see that Swedish responsibility lies in a larger context of socio-economic effects produced through reduced costs of labour and services. This is seen to be enabled through tax shifts driving:

> …innovation and scaling up of resource efficient and circular technology, as well as business models which can make an immediate difference and furthermore constitute potential export, and thereby can contribute both to Swedish economy and global sustainability on a larger scale. (SOU 2017:22 p.163)

The economy itself is seen as the main tool towards improving sustainability showing the development as described by Harvey (1990) where social relations are transformed where the other, workers or even the relationship to nature, is purely instrumental as the economy offers the tools for increasing levels of specialisation through 'creative entrepreneurship and innovation' (p.103). Ethical considerations on their own is not seen as sufficient motivation.

4.4 Perspectives of Profitability and Global Competitiveness

By reviewing the policy material, it is possible to say something about the intersubjective meanings which are reiterated and supported within institutional frameworks. As Cox states, 'perspectives derive from a position in time and space, specifically social and political time and space' (Cox, 1981 p. 128). As outlined above ideas and material capabilities are very much a product of the social and political time and space within which the CE concept is operating. Ideas of how to regain profitability and boost competitiveness within a globalised capitalist market economy structures the perceived space of action. High focus on market failures, competitiveness, and business models, while posing no convincing challenge to the ideas and structures of current production and consumption relationships, give little credence to CE principles within the Swedish fashion industry.

There is a certain logic to principles of increasing material circulation which is rationalised within each structuring force. However, as this rational is tested against real world conditions they fail to provide a coherent challenge to the status quo. It becomes clear that the structures of material capabilities and ideas within CE gain legitimacy from the status quo based in dominant ideology and does not offer a coherent challenge for change. The current instability and volatility of market structures for the fashion industry, as touched upon in section 4.2, creates a situation where the internal contradictions of the industry itself is exacerbated. I would argue that the CE concept is used to regain the legitimacy and capacity to maintain positions of power. The positioning of dominant groups and the historical structures forming the status quo would not in any way be threatened by implementing a fashion CE but rather ensure their position. However, currently there is little implementation of CE practices and it represents a niche development in the industry (Watson et al., 2017). Many high-profile collaborations are nonetheless taking place in which Swedish actors are implicated and there is a lot

of activity to increase the legitimacy of the concept through conferences (GFA & BCG, 2017) and publications (EMF, 2017). Making it an important focus for continued critical engagement.

5 Conclusion

To start this concluding section of my thesis I would like to reaffirm the fact that sincere efforts for improving the state of the fashion industry was evident within interviews and much of the studied material. However, in regard to the RQs I endeavoured to answer in this text the CE offers a weak challenge to unsustainable practices. *Intersubjective meaning and shared notions of economic growth, competitiveness, and securing profits are main drivers for the organisational principles of the CE creating internal contradictions undermining areas of environmental and social sustainability* (RQ1). As such the ultimately limiting factors for decoupling economic growth from material consumption is not sufficiently acknowledged. The scenario for sustainable development where a win-win-win is possible is maintained without sufficient recognition of possible trade-offs. The research gap identified within previous CE research claimed that there is no well-defined framework for how preferences of CE practice and principles was determined. I would conclude that there is a well-defined framework for priorities for the normative direction of a CE, at least as it is portrayed in this context. The focus on economic rationales to manage environmental impacts more falls within the realm of ecological modernisation and eco-efficiency measures and provides a narrow perspective of what is to be achieved (see figure 4).

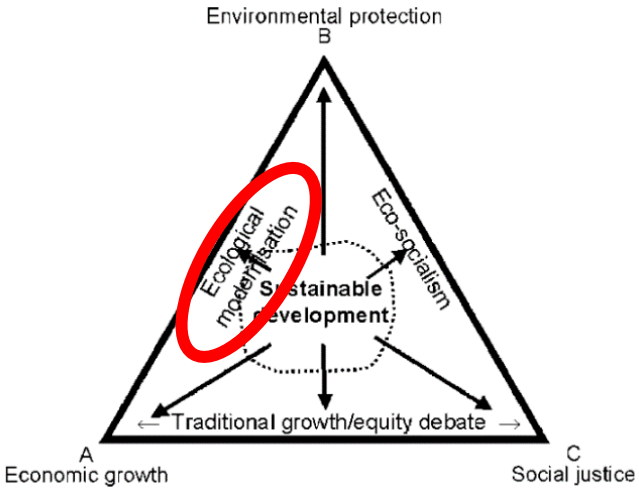

Figure 4. Reiteration of Connelly's mapping of areas of sustainable development highlighting the placement of the CE concept. (Adapted from Connelly, 2007)

As explored in section 4.1 the focus on business models create support for the same type of ideas which led to the formation of the 'throwaway society' in the first place. Focus on service provision is a continuation of historical structures, increasing the capacity of the fashion system to provide social and cultural meaning through commodities perceived as disposable. This creates conditions where recycling is increasingly viewed as an industry imperative to remain competitive. The coercive laws of market mechanisms push for increasing focus on recycling despite the limited evidence for these practices to reduce environmental impacts as processes are resource intensive and technological viability low. *Little challenge is posed that would reduce impacts of production practices or capitalist market dynamics. Large scale production networks with the same organisational logic as the status quo, such as high labour efficiency, repeatability and standardisation of production are conditional for CE business models* (RQ2). Thus, dominant ideas pose no contradiction to hegemonic modes of production and fundamental drivers which during the 60s-70s led to offshoring of the textile industry in the chase for improved margins to the detriment of environmental and social sustainability. No evidence found pointed towards a change in this relationship creating high likelihood for both large scale recycling processes. The production processes which these fibres would be fed into would likely be much the same. There are some possibilities for reducing the amount of virgin fibre used but overarching resource use of energy and water would still be exacerbated as demand increase. This given that there is no sufficient contradiction to historic structures that break the overall speed of material throughput even though a more stable stock could be achieved.

Hegemonic orders of global trade, international relations, and modes of production pose significant restrictions on the perceived space for action within formal institutions. *Rather the EPAs proposal is found to exacerbate internal contradictions of collection and the SOU report, even though it makes stronger claims for direct taxation of materials, does not offer any challenge to dominant modes of production or consumption relationships. It rather builds on the same contradictory ideas between economic growth, and reductions in resource use and consumption as found in the overarching R&D debate. Resulting in insufficient support within formal institutions for a sustainable development within the fashion industry* (RQ3). Thus, answering the overarching research question of this thesis. Concluding that the CE, as currently enacted within the given context, offers little opportunity for a significant challenge to the underlying drivers of the 'throwaway' society and its enactment through persistent unsustainable practices in the production and consumption system of the fashion industry.

5.1 Future Research

Alternatives and spaces for change was most significantly found within reuse and ideas surrounding the collaborative nature between stakeholders, consumers, makers, and producers in a local context that could be facilitated through CE principles. Fischer and Pascucci (2017) called attention to this and the need for institutional frameworks that enables shared ownership of resources, rather than hording and accumulation within a small group of stakeholders. This could be an interesting point of departure for future research in forming challenges towards the status quo of the fashion industry.

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Appendices

Appendix A

Researchers interviewed from two Swedish research programmes, Mistra Future Fashion and RE:textile.

Programme	Interviewee
Mistra Future Fashion	Dr. Sandra Roos, Team Leader of Value Chain Theme (Swerea IVF)
	Ass. professor Åke Thidell, Researcher in Value Chain Theme (IIIEE, Lund University)
RE:textile	Adrian Zethraeus, Project Manager (University of Borås)
	Ass. professor Jonas Larsson, Researcher in product circularity (Business Administration and Textile Management, University of Borås)
Anonymous, Interview 1	Ass. professor and researcher actively engaged in the development of CE practices for the Swedish fashion industry.

Appendix B

Interview guide.

Theme	Question
Stakeholders' role within the research programme	How would you describe your role and the work you do within Mistra Future Fashion/RE:textile?
D**efinition and assumptions about the CE concept.**	How would you define a CE within the research you do?
	Do you consider the CE to have the ability to address issues of unsustainability in a different or better way than has so far been realised?
	What are the impacts of CE on environmental, economic, and social aspects of sustainability?
Scope and Scalar Relationships of Research	At what societal level would you place the work and research you carry out? Is the scope placed on the local, national, or international level?
	As a part of a global textile industry, and a part of a larger political region within the EU, what role or impact do you believe Sweden has in the development of a larger transition towards a textile CE?
	Is there an active cooperation with public or state actors? If so, what significance does this have?
	Is there an active cooperation with private actors? If so, what significance does this have?
	What actors have the largest significance for you in your work and research within textile CE?
Potential Barriers	Does the programme manage to engage with all relevant actors within the circular model or do you believe that some are missing?

	What do you consider to be the most significant barriers to achieve a textile CE?
Goals and Future Orientation	How and by whom are the goals and targets for the programme set?
	Are there national or international political aims that influence what goals are possible to achieve or should be strived for?
	Would you say that there is a low or high level of likelihood of a successful implementation of a CE?

Appendix C

The overarching goal for Swedish environmental policy is directed through the generational target:

> The overall goal of Swedish environmental policy is to hand over to the next generation a society in which the major environmental problems in Sweden have been solved, without increasing environmental and health problems outside Sweden's borders.

Even though the target brings to attention to the importance to take into consideration inter- and intragenerational impacts the subset of 16 environmental quality objectives are difficult for actors within society to implement that do not have direct

1. Reduced Climate Impact
2. Clean Air
3. Natural Acidification Only
4. A Non-Toxic Environment
5. A Protective Ozone Layer
6. A Safe Radiation Environment
7. Zero Eutrophication
8. Flourishing Lakes and Streams
9. Good-Quality Groundwater
10. A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos
11. Thriving Wetlands
12. Sustainable Forests
13. A Varied Agricultural Landscape
14. A Magnificent Mountain Landscape
15. A Good Built Environment
16. A Rich Diversity of Plant and Animal Life

Source: EPA. (2018). *The National Environmental Quality Objectives*. Retrieved 2018-09-29, from http://www.swedishepa.se/Environmental-objectives-and-cooperation/Swedens-environmental-objectives/The-national-environmental-objectives/