Utrecht University

Master's Thesis in Applied Ethics

Examining Fast Fashion Brands' Role in Environmental Justice: Moral Duties and Practical Challenges for Good Product Design

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June 2019

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ABSTRACT: Prices of fashion garments have gone down and this is partly at the expense of the Earth's environment. With the speed and volume of garment production continuously increasing, the fashion industry has been declared one of the most environmentally damaging industries in the world. The typical life span of a garment involves a number of stages starting from design and finishing at the end of use. Each of these stages is detrimental to the environment, but the design stage could hold a solution to the negative impact of almost every one of these, if not all. Inspired by the potency of design, cradle-to-cradle, a theory of design that promises complete sustainability, is reimagined as a theory of environmental justice. In practice it is not evident that fashion brands are genuinely committed to changing their environmentally destructive ways. Thus, the cradle-to-cradle justice theory is used to formulate a morally significant case for whether and why fast fashion brands have a moral duty to ensure such justice. It is concluded that despite some practical challenges, there are compelling justifications as well as opportunities for fast fashion brands to remodel their design and market strategies for the sake of environmental justice, and that they ought to commit to doing so.

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Introduction

In recent years various ethical issues of the fashion industry have received increased attention. Following the Rana Plaza accident in April 2013 in Bangladesh, the treatment of workers in clothing and textile factories has been widely criticised (The Economist, 2013). Furthermore, the ethical treatment of animals has been discussed, especially with regard to the use of fur (O'Connor, 2018). The industry has also been reported as the second largest consumer of water, producing 20 per cent of the global wastewater, and generating more greenhouse gas emissions than all maritime shipping and international flights put together (Dory, 2018). Despite this, academia often underestimates the topic of fashion in fields that are not immediately linked with art and design, perhaps because of a notion that it is trivial and linked to luxury, or perhaps simply because of a lack of formal dress codes in the academic sphere of work (Litwack, 2006). In a similar way that dress codes and uniforms communicate a certain level of authority or career choice, everyday dressing also serves as a communicative tool, which allows to express the kind of people we are – our interests, aesthetic tastes, group membership, gender, ethnicity, income status etc. (Plannthin, 2016). Not only is fashion a communicative tool, it is also very importantly a huge industry of about $3 trillion employing an estimated 1 in 6 people globally (Morgan, 2015) with over 26 million people in the manufacturing side alone, not counting the many related jobs in design, retail, marketing and management to name a few (Gardetti, 2017). The industry is growing, with global clothing production having doubled between 2000 and 2014 and set to only increase as the developing world is catching up with the high consumption trend of rich countries (The Economist, 2017).

The fashion industry is immense, growing, and impactful; its moral complexities have primarily been viewed from a human rights and social justice point of view, even when it comes to the environmental damage. And this is deservingly so. The intensive use of water, chemicals and the waste that is generated by the industry does have a toll on human wellbeing, often away from the eyes of the wealthy. Whilst it is undoubtedly an important issue for humanity, there is also a danger in trying to understand and deal with it from an excessively anthropocentric point of view. The

danger is that we may miss important small details that throw nature out of balance resulting in further environmental disasters and climate issues. This paper suggests a slightly more ecocentric approach to environmental justice, where nature is also taken as being on the receiving side of unfair treatment. Furthermore, it is the aim to pay special attention to the businesses in the fashion industry, particularly fast fashion brands, which because of their sheer size and popularity are associated with the most environmental injustice in the industry (Perry, 2017).

As a generalisation, when it comes to ethical issues, businesses know what is expected of them. An increasing number of consumers are demanding that brands address their ethical problems, including their impact on the environment. And what they receive is a response, with businesses coming out with supposedly ethical product ranges of their products or campaigns that show the brand from a more morally conscious light. In the fashion industry this is evident in big brands like Gap and H&M who are responding to demands by creating sustainable ranges and investing in effective campaigns to presumably sway any negative public opinion around (Rick, 2017). However the problem with this is that such efforts often paint a picture of businesses accepting a duty towards the environment and being willingly conscious of their impact. A report which looked at how Australian companies respond to the climate risks, showed that businesses prioritised concerns of their environmental impact when they posed a visible threat to the company rather than for moral reasons, and many failed to address the risks anyway (Khadeem, 2019). In practice, brands like H&M are accused of 'greenwashing' – a term that refers to companies greatly overstating their ethical contributions to the public (Slater, 2019) and masking the unethical behaviour that prevails. Although many consumers are now information savvy and demand transparency to marketing that promises such ethical awareness (Rick, 2017), the fashion industry's adoption of greenwashing has also become increasingly sophisticated (Slater, 2019) and so fast fashion's negative impact on the environment (or other areas such as human rights) is less challenged.

In a world where climate threats are seemingly as often ignored by politicians as they are talked about by activists, the question of who ought to take genuine responsibility is up for opinion and debate. The urgency of environmental damage is also perhaps understated. In the UK, a recent news headline reads: "The government says plans to

force the [fashion] industry to be more environmentally friendly aren't needed“ – according to this government, some efforts are already being looked into, however decisions are not expected before 2025 (BBC, 2019). Admittedly, this shows a one-sided and negative picture of attitudes towards the environment, but it is important to note that such attitudes are unfortunately dominant. A practical but compelling reason is needed to push fashion (and other) brands to acknowledge their duties towards the environment to encourage more than slight improvements and greenwashing, but also genuine change. Because of this, the question this paper will seek to answer is whether fashion brands have a moral duty to bring about environmental justice. It will be argued that yes, they do, but this will not be done to discount the roles other parties have when it comes to the environmental damage of the fashion industry.

Given the relatively fresh and unexplored nature of fashion in academia, there is room for new perspectives on the industry regarding moral, environmental and justice issues. The literature, which this paper will mainly speak to, is that which is to do with environmental justice and distribution of remedial responsibilities and burdens of injustice. The former is often focused on what environmental issues mean for human justice, paying less attention to what is owed to nature as a whole; the latter tends to focus on global climate injustice mitigation efforts, which countries and nations ought to bear the greatest burdens and why. The duties of businesses are typically spoken in terms of corporate social responsibility, which can entail theories that favour shareholder or some group of stakeholders' interests. Although these theories sometimes acknowledge ideas of respecting the environment, it often takes the back seat. To my knowledge, a detailed analysis of the environmental impacts and injustices of the fashion industry, which acknowledges that nature ought to be treated fairly in its own respect, has not seen its way into academia yet, at least not from a Philosophy perspective. But it is my conviction that Philosophy can offer ideas for the ethical betterment of the fashion industry, which may not have been looked into yet.

The paper will be organised as follows. Chapter 1 will offer an overview of a typical fashion product[1] life span, focusing in some detail on the environmental impacts across each stage. The reason for this chapter is to provide a background and some

[1] By ‘fashion product’ is meant a typical fast fashion garment such as a t-shirt or a pair of trousers.

historical reasons and the extent of the environmental destruction taking place. This is regarding both in how widespread the negative impact is across all of the product life span stages, as well as how critical the environmental damage caused is. Although each of the product life span stages has a different but significant level of impact, the design stage is the one stage that has links to all the other stages. The design stage is arguably one of the most important because it is the phase where the environmental impact is determined. And so, cradle-to cradle, a theory of design and sustainability, which promises a solution to the environmental destruction caused by products, is introduced in the second part of the first chapter. Cradle-to-cradle points out the potency of design when it comes to the environment, but is also refreshingly focused on practicality and effectiveness, which is one of the key reasons why the theory is used here. Whilst as a theory of design and sustainability, cradle-to-cradle acts as a tool to achieve a healthy environment and industry practices that sustain it, it also is generous with statements of how nature should be treated, which are used to formulate a theory of environmental justice in chapter 2.

As an environmental justice theory, cradle-to-cradle holds that nature ought not be exploited and what has been taken from it ought to be returned. Furthermore it holds that respecting diversity is a requisite for justice. It asks to recognise that whilst the moral value of nature might come from a human-centric place, in order to sustain nature and ensure environmental justice our perspective needs to be broader and slightly more ecocentric. Chapter 2 will also look at some criticisms, such as that nature cannot be a recipient of justice because it lacks the relevant characteristics to be seen as such, and some drawbacks of the theory, such as that it does not offer a clear explanation for who ought to uphold environmental justice. Because this is the case, chapter 3 offers an exploration into how such duties might be appointed. The usual suspects from theories of responsibility distribution, such as causality, capability and benefitting from injustice, are taken into a consideration but deemed as insufficient on their own. Therefore a multi-principle approach to duty[2] allocation is created to incorporate the principles in a way that is relevant to the cradle-to-cradle context. The multi-principle approach favours capacity as the primary source of duty and is then applied in chapter 4 to see how it fits within the role of fashion businesses.

[2] Note that this paper will take the terms duties and responsibilities as synonymous.

Chapter 4 investigates why duties to the environment should primarily be placed with fashion businesses, and whether it is appropriate to place the spotlight on only them. It is argued that given the demands of C2C as a justice theory and the practical steps needed to act according to it, the fashion business is best placed to do so and therefore ought to do it. This is not done without giving consideration to two other relevant parties that could be said to have similar moral duties – consumers and governments. It is found that although they have a role to play, the strongest responsibility still fits with the fashion business. Following this, the final section of chapter 4 asks what product design might look like according to C2C in practice in a realistic setting – this includes practical challenges and a potential solution. The solution is not to be seen as a strict recommendation but rather an example of what we might expect if the fashion business duties were to be upheld.

Finally, the conclusion looks back at what has been said so far to add some thoughts to why the topic is important. It will endorse that fashion businesses have an immense responsibility towards the environment. It will acknowledge the role of other parties that bear responsibility, at the same time reiterating the gravity of product design when it comes to the environment and the damage it can prevent across the other product life cycle stages. The conclusion will also offer ideas for further research that could supplement this thesis.

1

Environmental Issues in the Fashion Industry

There are environmental problems in the fashion industry present across all stages of the fashion product life span, starting from the design or raw materials stages all the way to end of life. By environmental problems is meant the negative impacts on nature that lead to biodiversity loss, destruction of ecosystems or species, health problems, pollution and waste due to human activity. In other words, environmental issues and destruction refers to what we often take to be the contributing factors to anthropogenic climate change.

In academic and non-academic literature the fashion product life span has been conceptualised in various ways, sometimes switching the sequence of some of the stages and sometimes renaming or combining stages to include more. This following section of the thesis will explore the environmental impacts at each stage and take them to be, in order, as follows:

1. Design of fashion goods
2. Production and processing of raw materials
3. Manufacturing of fashion goods
4. Transportation (can occur across all stages)
5. Retail and promotion
6. Consumer use
7. End of use

1.1 Fashion Product Life Span

A large number of fashion brands often do not have an awareness of their environmental (and social) impact and therefore do not factor it into the **designing** process (Little, 2018). The design stage of product development includes the design of production processes from raw materials to the finished product, therefore not factoring in the impacts during this early stage can be extremely problematic. This stage has a direct influence on the final product as this is where the most critical

decisions are made, including cost, appearance, materials selection, innovation, performance, sustainability, and quality (Bhamra and Lofthouse, 2007). Brands often use this stage as a cost-cutting opportunity, guiding the design process by how to make the product as cost-efficiently as possible in economic terms, ignoring environmental and social costs (Little, 2018).

The **production and processing of raw materials** make intensive use of chemical and natural resources, thereby generating a high environmental impact. The production of fibres such as cotton, wool, and synthetic fibres require large amounts of pesticides, water and energy; furthermore, synthetic fibres are obtained from non-renewable resources. (Caniato et al., 2012) Importantly, the impacts of this stage also depend on the potential recyclability and biodegradability of the produced and processed material, which is at a later point turned to product. Some of the most commonly used materials in the fashion industry are leather and natural fibres such as cotton, wool, and silk, the production and processing of all of which are among are among the worst for the environment (Little, 2018). Cotton, for example, requires the use of harmful chemicals, and accounts for the consumption of 4% of nitrogen fertilizers and phosphorous globally, as well as extreme usage of water (Little, 2018). In fact, one cotton t-shirt can use up to 2700 litres of processing of materials, which is the stage that prepares fabrics for use by dyeing, weaving, and spinning, uses a large amount of harmful chemicals. Chemicals used in both dying and treating fabrics pollute the earth, and use significant amounts of water in the process. Any chemicals that are leaked in water sources, or are exposed to workers in large quantities, leaving people in risk of serious, long-term health effects. (Little, 2018) Leather tanneries, for example, pour out hundreds of litres of toxic waste and chemicals used to treat leather such as chromium-6, these flow into local farming and drinking water and contaminate agriculture as well as health problems, dermal, digestion, liver and other problems (Morgan, 2015).

The **manufacturing** stage is most notorious for the working conditions which people in low-wage countries are subject to, however when it comes to the environment this stage does not immediately associate negatively. Nevertheless it should be taken into consideration how much goes to waste at this stage, for example, it was pointed out by the Ellen McArthur Foundation that the equivalent of one garbage truck of textiles

is wasted every second (Ellen McArthur Foundation, 2017). Furthermore, the energy dependent processes that take place at this stage should also be counted in, such as powering factories, steaming, ironing and other preparatory steps before releasing the product. Following the manufacturing stage comes the **transportation** or distribution stage, however it is important to note that transportation takes place across all stages, especially since the industry has become so globalised. Retailers increasingly rely on outsourcing their raw materials and products to low-wage countries, which then requires these products to be shipped to the consumers (Caniato et al., 2012). This undoubtedly contributes to greenhouse gas emissions and energy consumption.

Once the product has been shipped, it is fully ready and available for consumption. This marks the **retail and promotion** stage, which in terms of the environment has a lot to do with energy usage - things like in-store lighting and air conditioning (Little, 2018), but also the individual plastic packaging, travel and resource costs incurred when creating marketing campaigns and having them printed or otherwise distributed. It was reported that the worst in terms of environmental impact here are the luxury stores (The Pulse Report, 2018); this could potentially be because of higher standards for customer comfort and any packaging, storage, and temperature requirements. However, there is another element to the retail and promotion stage which is extremely impactful for the environment - this is to do with the purposefully alluring design of physical and online shops, as well as well as the design of fashion marketing and advertising. To gain a better understanding of this, it is helpful to look at how the ready-to-wear fashion industry has changed in the last few decades - this will also play a role in appreciating the damaging nature of the **consumer use** and **end of use** stages.

Summarising the fashion industry and its changes, Bhardwaj and Fairhurst (2010) have explained that until the late 1980s traditional retailers stayed competitive by utilizing their ability to forecast consumer demands. This was possible as consumers were less sensitive toward style, meaning it did not change frequently, and apparel remained relatively standardised because consumers preferred basic apparel. Furthermore, at this time fashion was considered a cyclical phenomenon, something which was adopted by consumers for a particular time - the fashion calendar during this time was mostly based on fabric exhibitions, fashion shows and trade fairs, that

consisted of the pattern of spring/summer and autumn/winter (Bhardwaj and Fairhurst, 2010).

The early nineties saw an increase in imports of fashion-oriented clothing; consequently there was a rapid increase in fashion-savvy consumers, and demand for the previously standardised apparel decreased. At this time, retailers were not able to sell out during the forecasted seasons, increasing the need for markdowns or sales (Bhardwaj and Fairhurst, 2010). The focus of the industry shifted to expanding product ranges with faster responsiveness to the newest fashion trends, and these became their points of competitive advantage. Amancio Ortega, the founder of the world's largest clothing retailer Inditex, which owns major fast fashion brands such as *Zara* and *Bershka*, has compared the speed of fashion to selling fish: “fresh fish, like a freshly cut jacket in the latest colour, sells quickly and at a high price. Yesterday's catch must be discounted and may not sell at all” (The Economist, 2012). Around the late 1980s, the fashion industry developed an infrastructure with an emphasis on reduced lead times along with maintaining low costs to ensure competitiveness by responsiveness to trends, but to also ensure affordability. Eventually, sourcing manufacturing and other processes in the industry to places with low labour costs and implementing quick response and just-in-time strategies became a norm (Bhardwaj and Fairhurst, 2010). However, in the last few years, the need for speed has only further increased. It has been reported that Inditex, one of the world's fastest and most on-trend fashion retailers (The Economist, 2012), faces growing competition from newer players with an online-only presence such as Boohoo.com and Missguided.com who are producing at even higher speeds (Dowsett, 2018). Consequently, even more frequently everything that goes on in the product life span has to be repeated, adding on to the environmental toll.

One of the main changes, which created this massive and rapid apparel production after the late 1980s was the increased number of seasons - the frequency with which the entire merchandise within a store was changed. Changes to the number of seasons arose partly from the changes in consumers lifestyles, but also the small and more frequent collections encouraged consumers to visit apparel stores more often with the idea of 'here today, gone tomorrow' and retailers exploiting people's fear of missing out (Bhardwaj and Fairhurst, 2010). Nowadays, high impulse purchasing is

characteristic of fashion consumption; this means that a consumer makes the decision to buy an item when confronted with it at the point of purchase (Čiarnienė & Vienažindienė, 2014). Marketing in the industry has also changed in the last few decades, shifting perceptions of apparel from something of quality that is used for a long time, to something that can be *used up* and discarded at no financial loss (Morgan, 2015). This brings us to the consumer use stage.

Bhardwaj and Fairhurst (2010) have examined how the evolution of 'throwaway or fast fashion' has been consumer-driven, not only supply-driven. As noted, the constant varying demands by consumers has impacted the process of forecasting shifting towards replicating famous designs and styles in small quantities and more frequently. However, they note that the perception of throwaway fashion varies among different generations. Young people that constitute the Generation Y prefer to have a higher quantity but low quality, cheap and fashionable clothes, whilst baby boomers prefer to buy less but higher quality clothes. Additionally, the desire to have variety and instant gratification is motivating consumers to prefer fast fashion retailers such as Zara and H&M (Bhardwaj and Fairhurst, 2010). Once the garment has been purchased, the environmental impact does not stop - some have pointed out that **consumer use** is the most environmentally damaging stage (Llorach-Massana, Farreny, & Oliver-Solà, 2015), whilst other reports note that whilst it is very damaging, they do not single it out as the worst (The Pulse Report, 2018). How the consumer handles, repairs and washes their garments also impacts the environment (Little, 2018). Frequent washing at high temperatures is not only damaging for the longevity of the garment, but also releases microplastics from synthetic clothing and chemicals from detergents into the water system (Messinger, 2016). Synthetic microfiber pollution is entering oceans at alarming rates and around 100,000 marine animals die each year due to plastic waste, which includes such microfibers (Dory, 2018). It is possible that retailers do not see this stage of the product life-span as their responsibility anymore and therefore do not tend devote resources to educating and encouraging people to care better for their clothing and the environment (Little, 2018). There are some exceptions to this where retailers will advise its customers to for example wash cold, less frequently and air dry instead of machine drying. Another issue here is the consumer's mind-set - as the price has gone down over time relative to incomes (Morgan, 2015) and demand has increased, the number of garments purchased by individuals has doubled over the last

decade (Little, 2018) and items are seen as something to be worn a few times and then discarded, adding hugely to global waste. Although there are some efforts to recycle, upcycle, donate or resell, at the **end of use** stage, the majority of clothing ends up in landfills (Little, 2018). It was reported by the Copenhagen Fashion Summit that fashion creates 92 million tons of solid landfill waste each year (Campione, 2017). With the increasing popularity of synthetic fabrics that release chemicals over time and are not biodegradable, this only adds to the global waste problem (Little, 2018). Notably, a lot of what happens at this stage is dependent on consumer attitudes, but it should not be forgotten that environmentally sustainable disposability of a garment is determined at the design stage.

In a nutshell, the usage stage may have the most damaging environmental impact, the disposal of clothing creates millions of tons of waste yearly, whilst the design stage determines a lot of the impact of the later stages, making it one of the most important phases of the product life span. With the dramatic changes and continuous growth in fashion demand and consumption, the only way to reduce or prevent future damage is to rethink the status quo of these practices. With the current practices, as more products are created, more raw materials are needed, more chemicals are used, and more waste is created; given the size of the fashion industry, the environmental damage is bound to be disastrous.

1.2 Reconsidering The Design Stage: Cradle-to-Cradle

As shown, each stage of fashion products' life spans plays a role in contributing to environmental damage, totalling up to one of the most environmentally destructive industries. All of this begins with stage one - the design stage. As mentioned, whilst it might not have the largest *direct* environmental impact, the decisions made at the design stage shape the intensity of the impact a garment will have across all of the other life span stages. Design may be zero-waste, and create biodegradable or compostable products, which are aesthetically classic and not trend-led, all of which play a role in environmental sustainability (Payne, 2011). It can even be used to shape consumer behaviour (Bhamra, Lilley, & Tang, 2011). However, for fast fashion brands, the creative design stage is often replaced with their designers copying or tweaking existing designs, even notoriously from small businesses (Lieber, 2018)

This acts as not only a cost and time cutting measure compared to creating original designs (Payne 2011), it is also a source of competitive advantage and a response to the consumer demands.

Design in general, not just the fashion industry, has been criticised since the late 1960s for things like creating wasteful products and imposing many stresses on the planet (Bhamra and Lofthouse, 2016). In North America, for example, 80 per cent of manufactured products are discarded after a single use and 99 per cent of materials used to make products or found within products are discarded in the first six weeks (Anderson, 2007). However, if these products and materials were to be designed with the environmental impact of the various stages in mind, then perhaps the damage would not be as bad. Environmental and sustainability issues are rarely addressed in design briefs, therefore it is often difficult for designers to have the opportunity to engage with environmentally responsible design (Bhamra and Lofthouse, 2016), impacting what goes on in the later stages. Conveniently, there is a design and sustainability theory, which details this very problem and what could be done about it.

Cradle-to-cradle (C2C) is a concept coined and refined, although not invented, by scientist Michael Braungart and architect William McDonough. Their book "Cradle to cradle: Re-thinking the way we make things" (2008) fittingly starts with a quote by Albert Einstein: "*The world will not evolve past its current state of crisis by using the same thinking that created the situation.*" C2C urges design for sustainability and dissects the flaws of the current design traditions to create a whole new way of thinking about the design process and aims.

The fundamental question addressed by C2C is how can we combat environmental problems instead of perpetuating them. The answer given is that what is needed is a whole new strategy for design; one which can do good instead of less bad. The reasoning behind this is that doing less bad still perpetuates the environmental problem, only more slowly. Doing less bad has been the typical response to environmental destruction, this is also known as 'eco-efficiency'. It is often found in various environmental agendas using terms such as reduce, avoid, minimise, limit and so on (p.45). Reduction is the central idea of eco-efficiency, however we have too little knowledge about the effects of industrial waste and pollutants to be confident

that it is desirable (pp.54-55) The C2C authors claim that any regulation or agenda for limiting or reducing the environmental impact, unknowingly acts as an indicator of a design flaw. They even posit that they act as licenses to do harm as they permit a certain 'appropriate' level of waste or pollution.

When it comes to recycling, another eco-efficiency staple, Braungart and McDonough hold that usually it is rather *downcycling*, in that it reduces the quality of material over time. For example, when metals or plastic bottles are recycled, they are mixed with other metals or plastics, respectively, to create a lower value material, which will not be reusable later down the line as the material properties will have changed and separation of the mixed materials is unlikely to be possible (p.56). In the fashion industry, people may think it is an environmentally positive choice to purchase items made of fibres from recycled plastic bottles. However it turns out these contain toxins such as antimony, catalytic residues, ultraviolet stabilizers, plasticizers and others, which were never designed to lie next to human skin (p.58). These types of eco-efficiency efforts, although admirable and possibly well intentioned, are not a long-term solution when they work within the same system that created the problem (p.61). To be 'less bad' is, according to C2C, to accept things as they are, and give up on envisioning an entirely different model, which could be 100% good (p.67).

The design strategy C2C proposes for answering the question of how to combat environmental problems, is to focus on creating products that when their useful life is over, become food for plants and animals, nutrients for the soil, or that are able to return to industrial cycles to supply high-quality raw materials for new products (p.91). This philosophy is inspired by nature in that it operates according to a system where there is one, no such thing as waste, and two, a focus on respect for diversity. Let us consider each in turn.

The idea that there should be no waste or 'waste equals food' means that all the major nutrients are cycled and recycled. This kind of C2C system has nourished the planet and let it thrive for millions of years until the advent of industry, which altered this natural equilibrium. Early industries relied on what they thought was an endless supply of natural resources or 'capital' and nature was seen as something that was capable of absorbing all things and regenerating (pp. 24-25). Human understanding of

nature has dramatically changed by now, with studies proving the vulnerability of the Earth's systems. Despite this, modern industries still operate according to old paradigms, where the health of the natural systems has not been taken into the design agenda. Today we extract resources that cannot be replaced at an adequate rate and dump new material into the earth that cannot be naturally processed or used (p.92), and the infrastructure, which we have today is based on the same disregard for nature as before (p.26). The focus is on not much other than creating a product to get it to a customer quickly and cheaply (*Ibid.*).

The way to achieve 'waste equals food' is to approach design by thinking of materials as part of either biological mass or technical (or industrial) mass, each with its own material flow of biological or technical nutrients (pp. 92-93). Currently industrial infrastructure ignores the existence of either, however recognising that biological nutrients are useful to the biosphere and technical nutrients are useful to industry and technology could be beneficial for the environment and advancing sustainability goals (p.93). As cheaper and new synthetic materials have taken over the market, it has become less costly to produce replacements to various durable products than to reuse them on industry level. Likewise, people used to take time to repair products, but today it is so cheap to buy a product new that getting it fixed does not seem worth the time and effort (p.97). Throwaway products have become the norm, which, as mentioned, is very much the case in the current fast fashion industry. However the sheer quantity of waste might not be the greatest concern here, the real problem might be that the 'nutrients' from the materials, which could be put back for the industry or nature, are contaminated or lost. Not only is this because there are not many adequate systems for retrieval of the valuable materials that are wasted, but also because most products are made up of mixtures of materials (technical and biological) that cannot be saved from their current lives (p.99). In the fashion industry, a leather shoe is a great example of this: shoes are, in most cases, no longer vegetable-tanned as they used to be; nowadays chromium tanning is used for lowering financial and time costs. Chromium is rare and valuable for industries, but it cannot be retrieved after the shoe has been tanned. Furthermore, chromium is a carcinogen, and as leather tanning is typically outsourced to developing countries where little precautions are taken, it has negative effects on human health because of exposure, and water contamination of the chemical because of manufacturing wastes. Additionally shoes often have rubber

soles which contain plastics and materials like lead that rub off as we wear them and contaminate soil and water, but are also dangerous for our and the environment's health if burned for fuel (p.99). Given all these ‘design flaws’, Braungart and McDonough argue, humans must learn to imitate nature's cradle-to-cradle system in design so that the concept of waste does not exist (p.104). This means products, systems, and packaging need to be designed from the very beginning on this understanding, and in a way that allows them to be disassembled safely and usefully. This would even potentially save money for materials for businesses overtime (p.114).

In addition to doing good rather than less bad, and envisioning waste as food, the cradle-to-cradle concept champions respecting diversity. With regard to product design this means taking into account not only how it is made, but how it is to be used and by whom (p. 139). Instead of taking a one-size-fits-all approach to design, C2C encourages working in partnership with nature and responding to the relevant needs of it in each situation (p. 156). Ultimately, there is a need to shift away from anthropocentric product design. Instead of using nature as a tool for only our perceived benefit, we can design systems that regulate themselves and serve nature as well (p.156). Traditionally changes in design come from responding to changes in trends and competition, the C2C philosophy encourages diversifying and increasing the scope of the relevant contexts. For example, a garment designer should think beyond whether the product is gentle against the skin, functional, looks aesthetically pleasing, whilst being competitive in the market. With a broader context, things that will also be considered would be whether it is gentle on the planet and its systems, and whether the packaging and content can act as food for the biological or industrial nutrient flows when disassembled and used (p.145). This would plausibly also require diversifying with regard to the team of designers, with experts from various fields of expertise, not just sticking with the usual suspects, who are unlikely to be able to create C2C design by themselves with their traditional knowledge.

In short, the aim of cradle-to-cradle is to offer a new way to address environmental destruction. It assumes and shows that current efforts of doing less bad are only slowing down the bad rather than dealing with the perpetuation of it, which is not desirable. In order to do good, products must be designed in a way that makes waste

from products and production processes equal food in biological and/or technological nutrient closed-loop cycles. This follows the example of natural cycles, which have for millennia *sustained* the environment and biodiversity without creating environmental damage. Furthermore, diversifying with regard to who we believe to be the stakeholders of the product by, for example, including the interests of other species, and who designs the product as well as how it is created, will also help to tackle environmental destruction and achieve sustainable industries and their products.

The C2C idea is well received by many - it promises a seemingly perfect method to dealing with at least a large portion of our environmental problems. But as convincing as it is to many, to others it does not seem to be the case. The idea that earth is for our full disposal is glaringly prevalent in practice. Because of this, any need for change in design approaches is overlooked or not considered. If we do take that environmental problems are real and serious, then there does seem to emerge some intuition of its moral significance, and a desire to show that something like C2C ought to be seen as a duty. The next chapter will consider a potential candidate for creating grounds for such duties.

2

Cradle to Cradle as a Theory of Justice

The C2C theory is prescriptive in that it offers instructions for what should be done to do good for the environment and help its on-going destruction. The aim of the theory is to foster a new kind of attitude towards design and sustainability; an attitude, which promises to do 'good' instead of 'less bad' through design - a point, which already implies that the former is more desirable than the latter, and that the right thing to do is the 'good'. However, interestingly, one of the authors, Braungart, is careful to point out that the C2C theory is not to do with ethics, or rather that he does not want it to be seen from such a point of view. His reasoning for this is pragmatic - seeing problems as ethical, he argues, will not solve them (Braungart and McDonough, 2008, pp.11-12). At some point everyone behaves unethically, in at least small ways, and so seeing things in such terms might be discouraging. In order to solve problems the key thing is just to view them in a practical way and be smart about them going forward (p.12). However, it seems these convictions do not take into account the practical competence of the field of applied ethics - which the concept of C2C falls under.

The claims of the C2C theory can be interpreted as a view of how nature and the environment ought to be treated. Perhaps articulating C2C in ethical terms is a useful and good starting point to justifying it also as a tool for environmental justice. It seems unintentionally, C2C has shown that there is a moral problem, and more specifically an environmental justice problem. Nature is treated unfairly and wrongly for the sake of economic profits and consumer satisfaction, and because of industrial systems that are based on out-dated beliefs about the Earth's value and capacity. Interpreting C2C in this way, allows for an account of environmental justice, which can help make sense of any duties towards nature and the subsequent practical implications. It is important to emphasize that justice is not just a buzzword or any old concept - it is a meaningful part of what is morally important and holds a certain priority within societies. According to John Rawls (1971), justice is the first virtue of social institutions in the same way that truth is the first virtue of systems of thought. A theory however appealing must not be accepted if it is untrue, and institutions must be reformed or removed if they are unjust (p.3). He claims that every person has a

sanctity founded on justice that even the welfare of society as a whole cannot outweigh in importance (p.4). Because of this, Rawls claims that justice does not allow for an approach where the sacrifices imposed on a few are justified by the greater advantage of the many (*Ibid.*). Although, in general, men disagree about what the exact principles of justice should be, they do tend to understand and agree that there is a need for justice in a society. One of the reasons for this is that it allows for social cooperation (p.5). Men are ready to declare a characteristic set of principles for assigning basic rights and duties, and for choosing what they take to be the appropriate distribution of the benefits and burdens of social cooperation. (*Ibid*.) Whilst they likely hold different conceptions of justice, they can still agree that just institutions are such where random or subjective distinctions are not made between persons when assigning basic rights and duties as that would be unfair (*Ibid*.)

Rawls is known for his social justice theory, but environmental justice, traditionally, also has a lot to do with social justice. Carrying on the custom of social justice theories, environmental justice theorists have generally fixated on fair distribution (of environmental goods, burdens and benefits for people) in their philosophies. However, it is important to widen the scope of environmental justice theories and go further than the approaches taken in conventional social justice theories. These approaches are limiting even within their own fields, because by fixating on mere distribution, they cannot capture the true demands of justice movements (Schlosberg, 2004). There are other theoretical approaches, such as those, which concern themselves with recognition – for example, Young (2001) points out that there is a lack of recognition of group difference, which is a considerable part of unjust distribution and injustice. In discussions about justice and fairness people often talk about the fairness or equality of what (e.g. wealth), rather than equality of whom (e.g. women) (*Ibid*.). Young argues that recognising and acknowledging the groups, who are treated unfairly, allows to point out patterns that can reveal instances of structural inequality. Such inequalities are perpetuated by various institutions and processes that also reinforce one another (*Ibid*.). Other theories include discussion of future generations of humans to justify the protection of the natural world, or from a less anthropocentric perspective, those who attribute nature intrinsic value (Schlosberg, 2004). The unifying element or overlapping point of agreement in these theoretical approaches to environmental justice seems to be that the current treatment of the

environment is not good enough and that there is an apparent need for protecting nature. C2C can act as a theory for environmental justice, which captures the spirit that unites the environmental justice movement in a way that generously takes into account human interests and leaves room for addressing social justice concerns, whilst acknowledging that nature can too be on the receiving end of justice. A useful way to reconstruct C2C as a justice theory is to take into account the demands that Braungart and McDonough (2008) have claimed make a design fully cradle-to-cradle. These are equity, ecology and economy (pp.150-151). Economy refers to the demand that design should fit within the requirements of our economy – products should be made so that they can be profitable. The former two will be expanded on in what follows.

2.1 Who is Owed What, From Whom, and Why?

C2C can be seen as taking nature as a whole (encompassing species belonging to human, plant and animal kingdoms) as the recipient of justice. Through respect for nature's diversity, justice is upheld in ways that are relevant to its parts (that is, the same freedoms or rights might not apply to humans as animals, and speaking about non-human species as having duties would be nonsensical). Braungart and McDonough's (2008) idea of *equity* refers to the demand that design must treat nature (people and the ecosystem) fairly. Focusing on ecosystems in particular, this idea is reflected in both the C2C concepts that 'waste equals food' and 'respecting diversity'. The former implies fair treatment for the ecosystem in that it gives back what it takes, without giving back less or of lower quality. The latter indicates that there is not a certain group of individuals or species that is more or less deserving of fair treatment. These allow for the sustainability of the homes of human and other species, without the need for their unfair degradation or destruction.

C2C asks that nature be left alone or that it receive gentle treatment so that it can continue its self-sustaining processes. If this cannot be done because of human institutions and industries that disrupt such processes, then nature ought to receive back what has been taken from it. This account resonates with the intuition that people ought not to borrow what they plan not to or cannot return, otherwise it would be seen as stealing – a clear case of unfairly acquiring something and unfairly

depriving another. If we take the assumption to be that taking from nature should be seen as borrowing, it implies that nature does not exist as merely a resource, which we can do as we please with. Rather, environmental justice requires boundaries that do not allow for human behaviour to get out of hand, resulting in environmental destruction. C2C's 'waste equals food' concept details exactly what this entails. Recall that biological materials or 'nutrients' that are taken for industrial processes ought to be incorporated in designs in such a way that allows for them at the end of their use to be returned to nature in a way that is useful for it. In addition to this, dumping of waste that cannot be usefully processed by nature (such as mixtures of biological and technological nutrients and/or technological nutrients by themselves) is a case of injustice as it treats nature harshly and disrupts it because nature on its own cannot process such waste. Take the example of leather tanning, which, as mentioned, has damaging affects on nature as well as the health of those living in proximity of these tanneries – often in the poorer regions of the world. The C2C theory if applied here would take into account that this is an injustice for the people, but also the idea that nature is being treated unjustly. According to C2C, products and processes should be designed in a way that the waste produced is not toxic or harmful for nature so it can sustain itself. The theory posits that natural closed loop cycles allow for continued flourishing of species and their habitats, which also indirectly supports ideas of intergenerational justice, making C2C versatile as an environmental justice theory.

The next thing nature should receive, as a matter of justice, is fair consideration and opportunity. This comes from the concept of respecting diversity meaning that the flourishing and continuance of nature and its parts, such as different species and ecosystems, should not be sacrificed for the sake of some other enjoyment. As a justice theory, C2C urges people and their activities to not be considered as divorced from nature. This is related to the second design demand, as distinguished by Braungart and McDonough (2008). *Ecology,* understood by Voorthuis and Gijbels (2010), describes the fundamental idea of the world that is pursued by C2C: a world where waste is eliminated. To add to this, C2C implies more than merely the elimination of waste. It champions a vision of a healthy ecosystem that is able to thrive and where species and nature more generally are able to coexist (to a naturally reasonable extent - i.e. it does not ask for wild predators and their prey to hold hands). For example, combining concepts of equity and ecology we must ask whether it is fair

that the waste of our products pollutes the drinking water of humans and habitats of other species, destroying nature elsewhere? If the answer here is 'no, it is not fair' then the follow up question is 'why not?'

The original C2C theory does not offer much justification for *why* nature is owed these things, or anything at all. It mostly takes the need for protection of nature as a given, and merely offers a better way of doing it compared to eco-efficiency or to no effort at all. There is mention of the vulnerability of nature and the importance of maintaining its health (p.26) and natural diversity (p.33), however the leap from these to what nature ought to receive is left unclear. Perhaps allowing a generous interpretation of this in combination with the notion that nature ought to be dealt with in a smart way (p.12) we can take the idea to be something like 'those who are vulnerable and unable to speak for themselves ought to be protected and not exploited by those who are rational and able to protect'. So, the justification lays in the vulnerability of nature and people's ability to be smart and reasonable enough to recognise its value and not abuse it. Nature has essential instrumental value to humans (and other species) that together with its vulnerability requires it be maintained at a sustainably healthy state. And although there are some hints of nature being owed something also for its own sake – that there is value in its health and diversity, which goes beyond instrumental value – this is not delved into. Perhaps it is not necessary to have such a layer to the theory as it merely complicates things. However, there is something to be said for trying to understand nature not purely from the perspective that it is only there for the sake of humans.

More ecocentric views, as opposed to solely focusing on the instrumental value a well kept environment and nature has for humans, are not a novel concept, and are prominent in conservation discussions. Emerging from a contentious debate between those who argue that nature should be protected for its own sake and those who believe it should be protected for its instrumental value to humans are views that try to marry both sides of the debate (Tallis & Lubchenco, 2014). An example of such a marriage are relational values, which apply to all types of relationships "between people and nature, including relationships that are between people but involve nature" and include, for example, preferences, principles, and values that are associated with relationships (Chan et al., 2016). In philosophical terms relational values include

"eudaimonic" values (associated with a good life) and are not found within things, but come from relationships and the responsibilities to the relationships (*Ibid.*). Similarly as Schlosberg (2014) is worried that understanding justice only in terms of distribution can lead to overlooking important issues that deserve attention, thinking only in terms of instrumental may miss a fundamental basis of concern for nature (Chan et al., 2016). Imagine a tree, which is deemed sacred, because perhaps it is associated with histories, ancestors, or sustenance of many kinds. It seems incorrect to claim what is described is value that the tree possesses on its own, it is also not quite instrumental value - instrumental value is to do with preference or need satisfaction, however sacredness is not caused by preference satisfaction. (*Ibid*.). Moreover, Chan et al. (*Ibid*.) argue that moral concepts like fairness and care (as opposite of harm) are best understood through the perspectives of a good life and relationships. Whilst C2C might not explicitly focus on relationships, it can be seen as something that is implied by the principle of respecting diversity, where learning how to co-exist and give fair treatment to nature is a way of flourishing for us as part of nature and for nature itself.

When it comes to identifying *from whom* nature should receive a just treatment, C2C does not pinpoint a certain institution or individual. It could be guessed that since it is a theory focused on the design of things, the answer here is 'designers'. However, C2C also asks why design is the way it is, what makes designers make the choices they make, and points out that the way we design now is out-dated and unnecessary. To investigate why the answer might be more than just 'designers' it might be useful to take the concept of 'respecting diversity' and borrow some ideas from Young (2001). Respecting diversity highlights that C2C as an environmental justice theory supports the need for recognition of those that are subject to injustice, and for taking steps to reverse it. Young points out that there are often underlying mechanisms that uphold one another allowing for inequality, and that these can be discovered by recognising inequalities between certain groups. The technique here would be to acknowledge the diversity of nature, the groups within it who are suffering injustice, and observe what upholds such injustice. Once this is known, there can be steps taken to identify who ought to take responsibility for it.

From a societal point of view, 'respecting diversity' involves seeing which groups suffer from injustice and the underlying mechanisms that allow for this to be the case.

In the fashion context, among these will likely be people living in low-wage countries that have been outsourced by fast fashion companies for jobs such as leather tanning. From an environmental point of view this involves identifying nature as a victim of injustice to uncover the processes that allow this. Perhaps, more specifically, focus can be pointed at relevant systems within nature, for example, the water system. Say, there are instances of toxic waste (e.g. from leather tanneries) polluting bodies of water having damaging effects on aquatic and other natural life. Such injustices are perpetuated by the systems that uphold one another, encouraging and allowing for bad product design. Such systems might range from the custom of failing to prioritise environmental health, to outsourcing to places that cannot afford to prioritise it, to the economic system which encourages keeping costs low for competitive advantage, to infrastructure which is built to produce unsustainably, to name a few. Once these underlying mechanisms that allow for environmental injustice are identified, the next step would be to examine why they are the case, and who should fix it, thereby giving nature its fair treatment. This thinking echoes with the beginning chapters of Cradle-To-Cradle (Braungart and McDonough, 2008), where there is an emphasis on old methods not bringing about new results. If we want to do good, there needs to be reform of institutions and the procedures that allow for unsustainable design. However, even this interpretation of C2C has clear shortcomings in that it does not identify exactly who has duties to reform institutions and old design practices.

2.2 Why Cradle-to-Cradle and Some Shortcomings

The C2C as a theory of design and sustainability is a seemingly perfect solution to many of our environmental problems. It promises to maintain a healthy planet for its various populations in a way that no other method would, unless consumption was completely stopped. Translating it to a theory of justice is beneficial because it has a practical solution at its core – the idea that products are designed in a way that promotes environmental injustice calls for redesign, not only of the products themselves but also of the systems that created them. This compared to theories that ask for anthropocentric thought experiments, such as Rawls' veil of ignorance, or perhaps Utilitarian ideas that include seemingly impossible calculations of harms and benefits, is much more palatable.

It could be argued that the core ideas of C2C are not too controversial – condemning exploitation and respecting diversity are fairly standard ideas of fairness. Extending these to nature is slightly more controversial and asks to broaden our perspective. C2C claims nature ought to receive justice because of its instrumental and relational values. These values can only be ensured if nature is sustained (rather than destroyed more slowly) by taking an slightly more ecocentric approach to justice is in theory and practice. The C2C approach is also appealing because it accommodates important points other environmental theories make, such as those about intergenerational justice, but also any beliefs or arguments that might insist that natural resources should be used for human benefit, as long as it is done in a non-damaging way where waste equals food. Nevertheless, whilst versatility, practicality, and real solutions with a focus on design for the environment are C2C's fortes, its incompleteness and drawbacks must still be addressed.

To oppose C2C as a theory of justice, it could be asked whether thinking of nature as a recipient of justice is desirable. Nature cannot have an understanding of fairness, therefore is it nonsensical to attribute notions of fair treatment to it? One way of answering this could be that, say, infants also do not have a concept of fairness, but as rational, moral agents we have a duty to treat them respectfully and fairly; we have a moral obligation to not exploit infants, animals and also nature, despite their inability to reason. The important thing is that we can reason, and take them into consideration. This being said, of course, there is a difference - infants and animals are sentient and with an ability to suffer and therefore at least some minimal interests, and arguably with a clear intrinsic value. Nature as a whole does not have this. To this there are two replies that immediately spring to mind, firstly, as humans we need to recognise that we do not have the authority to definitively and accurately deny something moral value just because we *can*, it is perhaps better to give others the benefit of the doubt. An example of this goes back to the idea of sentience, where for years it was thought that fish could not suffer because their nervous systems are much simpler and not like the ones humans were familiar with (Jabr, 2018) and therefore even animal activists would believe it was permissible to exploit fish. However, recent studies have shown that fish do suffer, and have an equivalent feeling to pain (*Ibid*.). This is not to make a point for vegetarianism or veganism, but it does show that there is more to natural life than the human experience to base our moral convictions on. Admittedly, this could

take precaution to extremes that morally forbid us from doing almost anything. But a reality check of the human capacities could also give a bit of encouragement for us to afford nature more thought. If it is not necessary to design things in a way that are destructive to nature, why not design in a way that preserves it instead? Secondly, nature should be understood as self supporting system where each element is important - what we do to nature and its parts has consequences for the parts that have their own interests (for example, as we would understand it, animals and humans), as well as its parts with instrumental value, relational value, and any combination of these. Until humans are able to accept that nature ought to be protected for its own sake, as a system we are a part of, we will continue to also sabotage ourselves, which would go against the ideas of even the more traditional moral thinkers.

As already mentioned, C2C is prescriptive as it speaks on what ought to be done, however it does not say much about what is already done, except that the previous efforts to do better for the environment were not good enough. This is rather important in matters of the environment as majority of the current environmental damage can be attributed to at least a few decades past (Morgan, 2015). From C2C as an account of justice we can infer what the just way to treat nature is, and as a design theory, C2C tells us how to achieve it in practice. From this we can derive some forward-looking duties to protect nature and create products that are sustainable and protect nature. But ought someone clean up what has already been done by the current or previous generations? And who ought to do it? C2C does not give much guidance on this other than to do good in the future. Inaction, however, does not seem compatible with the demands of ecology and equity - something ought to be done to make right the injustices of the past that nature and its species would have suffered from. At this point it is useful to remember that C2C was first and foremost a practical design theory for future products, not a theory for redesigning products already in existence. The theory does however ask to redesign the way we think, and the existing industrial systems that allow for the production of wasteful products. There is no reason to think that we should leave the damage already caused as is, if something can be done about it. Changing the flawed systems in a way that satisfies C2C, is doing something about the damage. Additionally, figuring out how to make the existing waste equal food would be ideal, however in many cases this would require some practically implausible interventions. C2C as a justice theory needs supplementary

ideas regarding what ought to do with the damage already caused, perhaps by basing duties of remedy on the injustice that ought not to have happened in the first palace. The theory is also still lacking a proper account of exactly who has duties to uphold environmental justice by ensuring products are designed according to C2C. What can be done to address this is outsourcing other theories that deal with duty allocation in detail - this will be the task of the next chapter.

3

Allocating Responsibilities

Given the points mentioned in the previous chapters, it can be inferred that in order to respect the environment and treat nature justly across the fashion industry, action needs to be taken. Environmental injustice implies that there exists some wrongdoing, which ought not to have happened in the first place and ought not to carry on. Hence this means that there are responsibilities or duties (the terms are used interchangeably in this paper) towards the environment. Furthermore, there must be someone who ought to bear these responsibilities.

Firstly, there is the responsibility to improve the circumstances that brought about the wrongful event to prevent it from happening in the future. For example, if a design flaw in a piece of clothing contributed to the extinction of a species, the responsibility would be to ensure that the processes that lead to this are changed so a similar event does not happen again. Additionally, remedial responsibilities ask to compensate or undo an injustice that has been done. For example, if a design flaw led to a chemical spill in, say, a river, the responsibility would be to clean up the river, in addition to preventing the same thing happening in the future. Of course, reversing something like species extinction is most likely to be impossible, however this does not negate the responsibility for reversal where it is possible. Both of these are in line with C2C as a theory of justice - the underlying duty here is the protection of the environment and nature, and failure to do so requires to undo the wrongdoing, so that the duty is respected, as well as the duty to prevent, so that duty continues to be fulfilled. Secondly, the party or parties that hold responsibilities to uphold environmental justice could be uncovered by either identifying who caused the injustice, who has the capacity to uphold the injustice, or who benefits from the injustice. This chapter will address these options and what they imply for fashion businesses.

3.1 Polluter Pays

Let us consider the idea that whoever caused a wrongdoing or injustice ought to be the one to take responsibility in the form of remedy, when and to the extent that they brought the situation about. This is fairly intuitive. Imagine two people, A and B,

walk into a shop, and A unbeknownst to B breaks a product. It would make sense for A to make up for the damage by paying for the product. Now imagine the same situation, but the shopkeeper makes A and B each pay half of the products worth. It would be reasonable for B to object to this on the grounds that he did not do anything wrong - he was not the cause of the damage and therefore he should be excused from taking the responsibility for or remedying the situation. So causality can create duties, and denying causality can be used a defence to escape them. Moral duty or responsibility in this case comes from whether an agent's conduct attracts moral blame. Perhaps sometimes an agent's conduct will be innocent and (by non-consequentialist theories) even if it leads to something like injury of another, will not deserve moral blame and therefore will not necessarily generate moral responsibility (although it may do for other reasons discussed later). Other instances may have negative causality, such as negligence, as legitimate grounds for moral responsibility, for example failure to prevent something bad from happening (Miller, 2001).

If one was to claim that a fashion business, for example Zara, has a duty to remedy some of the environmental damage, one might look at Zara's production processes to see where and to what extent the damage is caused. Once identified, it could be said that Zara has a responsibility to ensure its design and operations are sustainable and perhaps participating in other efforts to rebuild or clean the environment.

Across the various stages of the product life cycle, different causal agents who are outsourced (i.e. not direct employees of the company) are involved. For example, at the transportation stage, the transport company or delivery couriers are arguably the ones who cause the environmental damage rather than the fashion business. Similarly, in the design stage, which as pointed out determines a lot of what goes on in the other stages, it could be said that it is the designer not the fashion business who causes unsustainable designs that lead to the various environmentally damaging consequences. Or perhaps the cause could be placed with the consumers who by demanding fast fashion and more choice cause the increase in supply and therefore a need for unsustainable methods and designs to keep it up. What this shows is that there is not one single cause - there are a number of causal agents, perhaps each responsible at varying degrees. This brings up a significant problem for duty allocation. Caney (2010) argues that the causal or as he calls it 'polluter pays'

principle suffers from some practical challenges, although these do not necessarily discount the theoretical validity of the principle. The challenges are knowing who and to what extent is to blame for causing environmental injustice. As highlighted in the previous example, it is highly unlikely that anyone can determine what portion of the cause of a wrongdoing or environmental injustice lies with the designer compared to the brand, compared to the consumer and so on. This then calls for additional requirements to determining responsibilities to uphold justice, or it calls for a different principle. One such requirement might be the capacity to remedy or 'ability to pay' principle. This principle states that the party responsible is that which has the ability and resources to uphold justice.

3.2 Capacity

In the fashion industry, services outsourced by the business such as designers or cotton farmers might be able to deflect their moral responsibility for contributing to the injustice back to the fashion brand, by insisting that they do not have the ability to change their practices. Let us take cotton farming for fashion as an example. Given the low cost of fast fashion products it is reasonable to assume the cost of production is also low and therefore the pay cotton farmers receive for their produce is little as well. The environmental damage at the raw materials stage is one of the highest with cotton, as already mentioned it is hugely water intensive and has even been credited for the drying up of the Aral sea - the fourth largest lake in the world (Hoskins, 2014). Furthermore, because of the immense demand of cotton, the farmers have to use toxic chemicals, again environmentally damaging, to ensure sufficient yields. If they might choose not to do so because of recognising that they are causing moral injustice and begin to farm organic cotton instead (thereby increasing prices and decreasing yields), then other farmers who continue to use chemicals will take away the now organic farmers' business. Of course it could be argued that there is an increasing demand for organic cotton, so the organic farmers might still do well. In reality however, the cotton farmer has little to no power to make these choices. For example, in India, which is one of the largest cotton growers globally, the farmers have experienced a helplessness that has lead to thousands of suicides annually (Pokharel, 2015). *Monsanto*, the largest seed and chemical corporation in history have a monopoly on seeds and Indian farmers pay a high price for their genetically modified cotton seeds which promise to control pests and increase yields (Davila, 2011; Morgan, 2015).

This promise was not fulfilled causing farmers to have lower yields and to go into debt to afford pesticides, which have been coined as ecological narcotics - the more are used, the more are needed to be used (Morgan, 2015). This means helplessness - a lack of resources and power to an extent that does not allow these farmers to worry about the ecological impacts. Thus, they do not have the capacity to effectively act on their moral responsibility to protect the environment, despite having caused some of its destruction.

The principle of capacity or the ability to pay principle rests on the rationale that if we want a bad situation put right, we should place responsibility to those who are best equipped to do so (Miller, 2001). By capacity is meant both who can make a situation right most *effectively*, but also who will incur the least morally relevant *costs* (not necessarily financial) in doing so (Miller, 2001). In the cotton farmer example, it could be argued that it should perhaps be the fashion business, which has the duty to bring about environmental justice. By having a say in the design and materials of their products, fashion business have the ability to stop their perpetuation of the problem by increasing demand for materials that are C2C compliant. Furthermore, because of their low production costs they also have high profit margins (Bhardwaj & Fairhurst, 2010), leaving them with wealth to spend on remedies that would not be of comparable moral significance. A common objection to this spins back to 'polluter pays' principle - the duty to remedy should not fall with someone who has not caused the wrongdoing, however this is morally implausible (Caney, 2010). A quick example of why is the drowning child example: if we are walking by a pond and see a child drowning, with no one else around, it is our moral duty to rescue the child, despite it not having been our fault, because we *can* save the child, and because the *costs* of doing so would have no moral importance (Singer, 2007).

Miller (2001) and Caney (2010) both claim that it still seems somewhat counter-intuitive to ignore historical events. Miller (2001) points out that a problem with this principle is that it fails to ask how variations in capacity have come about, which is especially relevant with regard to wealth and power. Caney (2010) also claims that the historical origin of the problem bares moral significance. If someone's wealth came about in ways that endangered the environment, they would have more of a moral duty to remedy than someone whose wealth came about in ways that did not

endanger the environment. This brings us to the next principle for moral responsibility - the benefiting from injustice principle.

3.3 Benefiting from injustice

Continuing the cotton farmer example, where we claimed that perhaps the duty towards the environment would be greatest with a powerful, profitable fashion business, imagine that there are two fashion businesses, A and B, that are equally capable. A sells C2C compliant products, whilst B is a classic fast fashion business, which generates its profits and power in a climate endangering way. It seems intuitive to argue that B should bear more responsibility than A. The reason for this might be that A has more reasons to justify its position, especially wealth. In addition to other reasons such as claiming that taxing the wealthy restricts economic growth or liberty of the wealthy, A could also claim that it is entitled to its wealth because it came about in a just way, meanwhile B would not be able to claim the same (Caney, 2010). We could further ask, why focus only on whose profits or wealth came about in a climate endangering way, and why not also consider other injustices. For example, if A was indeed environmentally conscious but used slave labour to produce its garments, would it still have less of a moral duty than B to the environment? Caney (2010) claims that no, A and B both have equal duties to remedy the environment, although he acknowledges the intuition that A should have a duty to remedy the social injustice from slavery, whilst B should remedy the environmental injustice, he claims that this is not mandatory. Caney's does not offer much justification for this statement, but we might assume this might have to do with the ability to pay principle. Nevertheless it is not clear at this point how the responsibilities of A towards both causes ought to be divided.

Anwander (2005) posits that benefiting from injustice is not *generally* wrong, for example if a person makes her living from writing about the environmental injustice in the fashion industry, this fact alone does not speak negatively of her ‘moral compass’ or give her responsibilities to uphold justice. He argues that the morally relevant factor is whether or not the beneficiary *contributes* to the harm or injustice, where contribution can be in the form of perpetuation (where benefitting withholds something that is rightfully someone else's), enabling (where benefitting encourages or maintains injustice), or exploitation (where the instance of benefitting is at others'

expense) (Anwander, 2005). In the clothing industry these might look something like this. Perpetuation of environmental justice could be illustrated by a fashion business, which by designing items to be made of low cost fabrics such as viscose is benefitting from taking away nature's and other species' habitats due to the deforestation caused by obtaining viscose (Wicker, 2017). Instances of enabling can be seen where fashion businesses encourage excessive consumerism and throwaway fashion through their design, marketing and retail techniques. The fashion business benefits from the environmental justice that comes about from the excessive clothing waste each year as it means that people are buying in excess and justifying new purchases after discarding old items. Exploitation of the environment can be seen where insofar that a fashion business benefits from designs that use low cost fabrics such as the aforementioned cotton and viscose. The injustice is sustained by incentivising farmers to continue abusing the land with deforestation, without putting back what has been destroyed, and harsh chemical use at the expense of nature, the health of the soil, and water sources.

These examples of benefitting whilst contributing to injustice would give the fashion business a responsibility towards environmental justice, however the principle runs back to the same issue as the polluter pays principle. It would be practically problematic to find whom, and to what extent could be blamed for benefitting whilst contributing. Contributing has a similar, though perhaps a slightly more sophisticated, meaning to the polluter pays principle, therefore, from here on I will replace the principle of causing injustice or polluter pays to the principle of contributing.

3.4 Multi-principle view

Each of the principles for identifying who ought to take the moral responsibility of instances of environmental injustice or wrongdoings have been shown as imperfect when only on their own. This is partly because cases of injustice are morally complex, but also because the principles are context sensitive and not universal. Caney (2010), Miller (2001), and Page (2008) are among those who have recognised that there is a need for a more pluralistic approach to distributing responsibilities. Although those who advocate this suggest different approaches, they do agree that principles need to be combined in ways that are relevant to the context of the injustice at hand. This being said, from the above options, the ability to pay or the capacity principle is the

best placed to allocate responsibility, and also holds highest relevance to C2C because of its focus on practicality. If we agree with the capacity principle, then it is the case that someone, X, who *can* do something about a wrongdoing without sacrificing anything of moral significance, ought to do it. Even if there is someone, Y, who is better placed and / or more blameworthy, X still has a moral duty, only perhaps to a lesser extent[3]. When someone does not have the capacity to uphold justice, no matter their contribution or beneficence, it does not make any sense to say they have responsibility to do so as they simply cannot act on it without making themselves worse off in a morally significant way.

Given that there is some moral relevance to the other principles, we cannot ignore them. The capacity principle can stand on its own when attributing responsibilities, but it is given greater strength when combined with the contribution and benefitting from injustice principles. The contribution principle can stand when it is supported by the capacity principle, and is made stronger with the benefitting from injustice principle. Likewise, benefitting from injustice also does not attribute responsibility unless supported by the capacity principle, and is made stronger by the contribution principle.

Hence, capacity can be supplemented with the other principles to derive a hierarchy of duty allocation that might look like this:

> 1) If a party has capacity to uphold environmental justice, and is in this position because of benefitting from injustice whilst contributing to it, then this party has the greatest duty to do uphold justice – proportional first to their capacity (so it does not cost them anything of moral significance), then to the other principles.
>
> 2) If a party has capacity to uphold environmental justice and is in such a position because they have benefitted from injustice *or* contributed to it, they have the second greatest duty to do so – proportional to first to their capacity (so it does not cost them anything of moral significance), then to the other principles.

[3] In practical cases of remedy X might not end up acting on her duty if Y takes care of it, however in cases of preventing injustice both ought to act on their duty.

3) If a party has capacity to uphold environmental justice but *not* because of benefitting from injustice *or* that they have contributed to it (where *one* does hold), then they have the third greatest duty to do so – proportional first to their capacity (so it does not cost them anything of moral significance), then to the other principle.

4) If a party has capacity to uphold environmental justice but *not* because of benefitting from injustice *and* that they have contributed to it, then they have the fourth greatest duty to do so – proportional first to their capacity (so it does not cost them anything of moral significance).

5) If a party does not have any capacity to uphold environmental justice, then they cannot have any duties to do so.

Note that when combined with capacity, benefitting from injustice and contributing are given the same weight (for example, in '2)'). This is merely for convenience in this thesis, but perhaps in another project the two could be compared to determine which is more morally important. It could be guessed that contribution has more moral weight than benefitting from injustice perhaps because the instances of contribution as described by Anwander (2005) seem more deliberate, whereas benefitting can very often be accidental. However, there is nor time nor need to enquire further at this point. Moreover, the reason responsibility is proportional first to capacity is because it is the strongest principle and because it is the one that is relevant to bringing about justice in practice. If by some calculus it is decided that someone's contribution to an injustice is greater than their capacity, then their duties could still only be determined according to their capacities.

Some interesting questions to consider might be against the claim that when someone does not have the capacity to uphold justice it does not make any sense to say they have responsibility to do so as they simply cannot act on it without making themselves worse off in a morally significant way. Are there cases where it is permissible to make someone worse off because of an injustice they have committed or contributed to? For example, criminals who are jailed have some fundamental and

morally significant freedoms taken away – is this necessary to prevent future crimes? And therefore it is permissible to make someone morally worse off for the necessity of prevention, or is it merely as a punishment for injustice – in which case, is punishment just? How do we decide which cases of committing injustice should attribute responsibility regardless of whether it makes someone worse off? If we think it is appropriate to allow someone is made morally worse off because, say, they have maliciously contributed to the injustice, then the capacity principle would have to be adjusted to something like maximum capacity. However it seems this is something that should be left to the formal legal system rather than a justice theory, where we assume that each person ought to be treated in a morally just way. Nonetheless, the questions certainly raise interesting points about to what extent do we value prevention and the relevance of punishment in justice – and would this be relevant to the wrongdoings of the fashion industry as well?

4

Fashion Businesses' Duty to Bring About Environmental Justice

Taking the strongest criteria for responsibility allocation from the multi-principle view and the C2C justice theory, we can derive those who are duty bound. Recall, 'if a party has capacity to uphold environmental justice, and is in this position because of benefitting from injustice whilst contributing to it, then this party has the greatest duty to do uphold justice – proportional first to their capacity (so it does not cost them anything of moral significance), then to the other principles.' Firstly, let us consider what capacity might look like in our context.

The duty bound must have capacity to ensure that nature is not exploited or destroyed for its resources or contaminated with substances that it cannot process, and to respect diversity by keeping in mind much more than just human needs or desires. C2C also relates strongly to design of goods, as that is what determines the extent to which nature will be damaged, it is necessary for the principle of waste equals food to function, and it is also the point at which considerations of stakeholders, that should include nature, take place. When it comes to designing a fast fashion product, the process isn't quite as creative as we might hope. Rather, it is competition and financially driven which means that the design must be done according to how the fashion business wants it - quickly and with cheap materials and labour, where protection of the environment is not given much thought.

For example, Zara's headquarters in Spain has a 300-person design team who have been tasked to read through trend-forecasting books and putting together mood boards for the next collection (Hanbury, 2018). Furthermore, fast fashion brands, including Zara, are known to copy designs from small independent brands to large designer houses, in fact, their business model is largely based on copying trends and then bringing them to consumers quickly (Lieber, 2018). Once a design is created, it is taken to the pattern cutting team within the Zara headquarters to put together the first prototypes. Then once the prototype has been agreed on, a digitalized pattern is sent to factories (Hanbury, 2018). Assuming that similar processes go on in at least most

of the fast fashion brands, this shows that the brands are very capable of taking control of what they design. Even if they do end up copying the aesthetics of another garment, the decisions made at this stage regarding things like materials, maintenance, and upcyclability that are part of the later stages of the product can still be done in a way that does not damage the environment and respects other species and nature's diversity.

If like in Zara's case, the power to make decisions over product design rests with the fashion businesses, then it is not controversial to say that much if not most of the capacity to uphold environmental justice in the fashion industry lays with them. Additionally, large-scale fast fashion retailers are ideally placed to ignite a wider change within the fashion industry. Suppliers listen to brands like that because they bring them huge amounts of business; furthermore, other businesses follow fast fashion industry leaders to imitate their success. But not only are they strategically well placed for prevention; they also bring in net revenues that could afford further prevention and remedy efforts. For example, Inditex, posted a net income of 3.44 billion euro for the financial year ended January 2019, compared to 3.37 billion euro the previous year (Cockar, 2019). This brings us to the other relevant part for allocating responsibility – contributing to injustice whilst benefitting from it.

The reason these brands can have such large profit margins is because they are able to keep costs down with unjust practices across the product life cycle and their supply chains. It is much cheaper to produce garments that have been manufactured using environmentally unjust - energy and chemically intensive - methods (and unjust labour practices, if we are, like Caney, inclined to say that wealth that comes about from any injustice is relevant when distributing remedial responsibilities). Brands also benefit from the unsustainable speed and scale at which they produce, as well as from the aforementioned copying of others' designs to cut back on time spent designing original, but also more environmentally friendly, products.

Part of the reason fashion businesses have capacity to ensure environmental justice in the industry, is the role they play in contributing to it, and their position to stop doing so. Presumably because of the unsustainable design demands, fast fashion brands choose to source from suppliers that meet these at low monetary, but high

environmental costs. This again goes against the C2C principles of environmental justice. For example, H&M, Inditex, Marks & Spencer and Tesco are some of the brands who have allegedly sourced their garments from manufacturing plants in China, which after investigation were found to produce water and air pollution detrimental to human and animal life (Hoskins, 2017). In Jiangxi, a province in China, pollution from viscose production has contributed to killing aquatic life in China's largest freshwater lake, Poyang (*Ibid*.).

Like other fast fashion businesses, *Zara*, brings out a new clothing line every two weeks and produces 850 million garment pieces every year, resulting in a profound environmental impact (Laylin, 2012). Now, if brands like Zara made an effort to ensure their pieces are designed in a cradle-to-cradle way, then pollution such as in the China example would not take place because demands to manufacturers would be different, and perhaps there would be more pressure to manufacture in an environmentally just way. It is therefore appropriate to place contribution to environmental injustice with fashion businesses - it is because of their doing and lack of caution that the damage and injustice takes place. It could even be said that most, if not all, of the contribution to injustice is somehow borne by fashion businesses. They have a causal or strongly contributory role in all of the fashion garment life cycle stages, which are damaging to the environment, whilst also having a say in the supply and distribution chain management behind the scenes of these stages.

4.1 Objections to Focusing on Only the Fashion Businesses

It could be argued here that the problem of environmental injustice is greater in scope and to do with global and national governance, and that singling out industries unfairly targets businesses, which have much lesser roles on the environmental impacts. The market system and focus on economic prosperity and wealth are what act as both ideal and welcoming environments as well as catalysts for industries and practices that can be categorised as contributing to environmental (and social justice). Without using practices that are damaging, these industries would not be able to be anywhere near as successful in the current market economy. But not only are businesses constrained by the demands of the market, they also have to answer to consumer demand - without a globally recognised law that can tackle environmental

injustice in the fashion, and any other, industry, there is no incentive for brands to stop responding to demands. If a brand does convert to more expensively but also sustainably made products because of environmental conscience, another brand will stomp them out of their place with more current and affordable products. So, whilst yes, there might be an environmental justice problem *also visible* in the fashion industry, it is not separate from the wider environmental justice problem.

This then leads to the second objection, that the duties do not lay with fashion brands, but most fittingly with globally and nationally governing institutions and possibly the consumers, both of who act as great forces for determining the fashion brands behaviour.

Let us first consider the role of the (fashion) consumer. Admittedly, consumers also have the capacity to change their consumption habits (and thereby impact what is produced), and they also benefit and contribute to environmental injustice. Thus this gives them responsibilities to bring it. Individuals are able to form communities and powers of influence to teach each other about environmental injustice and then act together to alter demand and even bring awareness to justice movements. Veganism is an example of this, what started out as a niche community has risen and continues to rise affecting restaurant and supermarket ranges internationally which now cater for this demand and are understanding of the reasons behind it (Hancox, 2018). Furthermore, consumers benefit from the low prices, trendy garments and choice that is made possible from practices that are environmentally unjust and contribute to the problem by continuously demanding more fast fashion. However, the ability of an individual, or even a like-minded group of individuals to uphold environmental justice compared to the fashion business is arguably miniscule. A clear organised structure, and financial power and security is an undeniable advantage for a fashion business, when it comes to ensuring justice as these give a business a greater chance to act upon the direct impact it has at the design stage.

A practical suggestion could be to place some of the financial costs of remedial and preventative duties in the price of clothing; this way, consumers are given more capacity to uphold their duties. Moreover, making clothes more expensive might encourage consumers to value their goods more as well as decrease the excessive

demand and waste. Over time, this might also change the fast fashion expectations consumers might have. Doing something like this could be counted as another capacity of fashion brands to comply with the C2C theory of justice, by ensuring that the duties to nature are met by broadening their capacity to act with the help of other duty bearers. This might however be criticised as a privileged suggestion as only a small portion of the global population can afford to see increased prices. However, the portion of the population who contribute most to the injustice by consumption are likely the portion whose standard of living will not be decreased in a morally significant way if they are no longer able to purchase as frequently - a trivial want compared to the desperate need for fixing climate injustice.

As mentioned, the individual might lack the capacity to uphold its duties that are to do with environmental disasters linked to the fashion industry, however those who represent the individuals are significantly more powerful. Despite the obstacles of fast fashion businesses often operating on a multinational level, there could perhaps be more that governments could do to ensure environmental justice. For example, by collaborating with other governments to pass stricter laws, which would not allow the moral duty to protect the environment be bypassed by going to countries with less strict legislations. In theory, this fits well with the moral responsibility that governments (and everyone else with capacity to act) already have to protect the environment, unfortunately in practice such governmental collaboration is notoriously improbable - of course, this does not undermine the idea itself. Governments have financial resources but also the power to create task divisions and new legislation, as well as negotiate with other governments to ensure that items are designed according to C2C standards, and that the following life phases of products uphold these. In some ways governments could even be described as benefiting from the environmental injustice as it helps keep the economy afloat and gives jobs to a considerable amount of people, helping unemployment rates. Going back to the case of fast fashion brands copying others' designs, there have been enquiries of how this is legally possible and if governments are doing anything about this. Brittany Rawlings, an attorney with offices all over the USA, who specialises in fashion law claims that it would not make sense for the American government to increase copyright protection in the industry because fast fashion has proven to be economically favourable: "America's GDP for fashion is at $350 billion. The argument is that if we protect the designs, we'll stunt

that growth in the economy." (Lieber, 2015) However, by settling on the idea that the current fashion industry is the only model of the fashion industry that can benefit the economy, and failing to introduce stricter laws and more effort into combating environmental justice, governments encourage damaging behaviour from brands and consumers. This leads to designs and products that in their various life span stages have contributed greatly to environmental damage. These products' wasteful properties will also deteriorate nature instead of giving back to it what has been taken in a useful form, when inevitably the products are discarded.

There is a clear responsibility for fashion businesses to bring about environmental justice, which may or may not be better understood as a global phenomenon, rather than singling out the impact of one industry. However singling out an industry to observe its negative impacts on the environment can be useful to identify the problems, and to alert any governing organisations of them. It is also beneficial as by putting the pressure of remedial duties on businesses, the system within which they operate can begin to change from within and with probably greater knowledge and understanding of the processes than it would have with some external body simply instructing certain changes. Ability to remedy, and uphold environmental justice also comes from expertise of the industry, which fashion businesses have more of compared to other stakeholders. Furthermore, the causal and beneficiary connections these businesses have to the environmental injustice is much more glaring than those of other parties. Whilst the other parties may have other pressing duties to attend to, the fashion business would be operating within its immediate area and field of expertise and therefore could be said to hold the greatest responsibility.

4.2 Would C2C work in practice?

One of the reasons for using the cradle-to-cradle design theory was because of the ideal solution of mimicking nature's own cycles and nutrient flows that it proposed, and its focus on functionality. As a justice theory, C2C is still left somewhat incomplete and would benefit from further ideas, development and maturation. But the principles of justice it suggests are a starting point to offer moral justification and encouragement for the implementation of C2C as a tool, according to the ideas of the design theory. If we claim that fashion businesses have the highest capacity and responsibility to uphold this environmental injustice, it should also be examined to

what extent is this *realistically* possible in the fashion industry. Firstly, let us consider some practical criticisms of C2C.

C2C supporters posit that downcycling can be avoided by completely closed nutrient cycles, which are possible when separating technical nutrients from biological nutrients. However, thermodynamically it has been shown that the "work necessary to separate ideal mixtures of two or more substances increases without bounds as the separation process proceeds" (Bjørn & Strandesen, 2011). This means that the last tiny bit of impurity of one substance diluted within another will take infinite amounts of energy to separate. This is a fact reflected in recycling processes where impurities of materials can only be removed to a certain level beyond which they will remain. Whilst it is still possible that separating materials is useful, 100% closed nutrient cycles are unlikely to be a possibility; furthermore, the elimination of problematic chemicals needed in the recycling process is not guaranteed either (Bjørn & Strandesen, 2011). The closed loop process also requires large scale social and infrastructure changes, without which the effectiveness of C2C cannot be guaranteed (Llorach-Massana, Farreny, & Oliver-Solà, 2015). However, perhaps implementing it as far as possible on an industry level could be more successful. For example, designing in fashion according to C2C would only require major infrastructural changes in the relevant industry sectors as once in use garments do not need to be powered by energy. As long as the industry or brand is able to set up an upcycling depository system for customers to bring their garments back to, this does not necessarily need to become an initiative on an even larger scale. That could be a short-term solution - however in the long run it is still necessary to rethink the larger systems that have caused the environmental injustice and climate problems in the first place.

Furthermore, another criticism discounts the idea that biological cycles from product waste (as food) will be able to operate and be beneficial in the same way as when occurring naturally. It is perhaps too idealistic to work in practice, and therefore cannot necessarily achieve environmental justice. Even if we take the production of natural raw materials required for a t-shirt, these may be grown in one area of the world or even country, but discarded elsewhere. Thus the land, which produced the t-shirt does not get the nutrients from its end of life. In nature, the decomposed apple

gives back to the same soil from which the tree that created it was grown, however this type of natural cycle is unlikely when it comes to products meaning that nature will not be treated fairly - some parts will get excess nutrients and other will have nutrients extracted. This criticism is supported by Bjørn & Strandesen (2011) who point out that the environment does not necessarily benefit from the addition of nutrients. It has been shown that individual species have various reactions to different concentrations of given nutrients. Whilst for some species increasing nutrient flows will inhibit growth, other species will be stimulated. The result is still a manipulation of natural systems that can distort nature's equilibrium and change species composition where some might go extinct and some might overpopulate. The potential of this not only eliminating some species but, even potentially destroying biodiversity, which arguably violates the C2C principle for respecting diversity (Bjørn & Strandesen, 2011). This could perhaps be more achievable if current demand and consumption levels were significantly lower, but that is not the case, nor is it where the world is currently headed. Related to this, C2C approach is presented as compatible with current consumption levels and traditions, however there is compelling historical evidence that consumption is well correlated with income and societal economic growth (*Ibid*.). Even if completely closed loop upcycling of materials was feasible, continued growth would not guarantee that new and increased demand for resources will not take place, with the threat of resource scarcity. Continued growth will increase the need for converting natural land to grow more bio-based materials, disrupting some species or the existing biodiversity (*Ibid.*). Furthermore, with continuous growth, the natural regeneration processes will not be able to keep up with the speed of consumption (Llorach-Massana, Farreny, & Oliver-Solà, 2015). These points show that even the most sustainable designs will inevitably cause some environmental destruction and injustice.

Lastly, there are some critics who attack C2C for lacking regard for day-to-day business reality (Bakker, Wever, Teoh, & De Clercq, 2010). Companies without a return system in place should question whether redesigning their products following a C2C material selection process is always sensible, if that product is going to end up in existing end-of-use systems of landfill. A company selling fashion products should first set up a take-back system before C2C designs can be seriously implemented (Bakker, Wever, Teoh, & De Clercq, 2010).

In practice, already to a certain extent we have to accept that there are some limitations to taking on the C2C design theory in full straight away, and therefore we may not be able to perfectly meet the demands of C2C as a justice theory. If we want to have homes and food for our population, some loss is inevitable, as land will be taken up to do these things. With the amount of people living on our planet, it is simply not possible to be 100% good and to fully respect diversity. This does not eliminate the practical benefits the philosophy still has to offer. Steering away from this idea of perfection, but also from doing 'less bad,' we could think in terms of doing the 'best we can'. This would then still result in the best way to uphold environmental justice as demanded by C2C, until an even better way to do so is brought to the table (which there should actively be efforts towards). Some upcycled materials will be slightly impure, some bad will still happen and some diversity will not be respected - this might just be the best we can do in practice, whilst still respecting the C2C theory of justice as much as possible.

A potential way to dodge the practical limitations to pure C2C (until our science catches up with the theory) is combining C2C with Life Cycle Analysis (LCA), which is a concept based on eco-efficiency. It is also imperfect, however it could supplement C2C in a beneficial way and act as an analytical tool to keep track of environmental priorities (Bakker, Wever, Teoh, & De Clercq, 2010). LCA is the most complete available tool to measure improvement in eco-efficiency, and is widely used to identify improvement potential in products across industries (Bjørn & Hauschild, 2013). One of the main problems with the life cycle analysis is that it leads designers to have something like tunnel-vision (Bakker, Wever, Teoh, & De Clercq, 2010). This means that once the system boundaries and function of the product are established, only environmental improvements within these boundaries are considered. On the other hand, if a designer would follow a C2C perspective focused on eliminating harmful materials and closing material cycles, some product life stages, and energy or water usage could accidentally be neglected, which would less likely be the case with LCA (Llorach-Massana, Farreny, & Oliver-Solà, 2015). Given that it is uncommon and unlikely to be working in a system based on entirely renewable energy that would comply with C2C, energy needs to be of greater concern (Bakker, Wever, Teoh, & De Clercq, 2010). Similarly, water usage needs to be a priority when designing for both

the manufacturing and consumer usage stages. Together, LCA and C2C could complement each other. In approaching sustainable design with LCA, C2C would ask whether the systems in place have the possibility of becoming completely sustainable rather just 'highly-optimised unsustainable' as a best case scenario (Bjørn & Hauschild, 2013).

Bakker, Wever, Teoh, & De Clercq (2010) describe a case, which was part of a Delft University of Technology graduation project in 2008, where LCA and C2C meet. This project was done for the global delivery and freight company TNT with the goal to develop a more sustainable uniform for the mailmen. The project began with the C2C framework, however once it was realised that the concept neglected impacts related to CO2 emissions, which was one of the primary aims of TNT, the project introduced the LCA to evaluate the sustainability of the business uniform. Using the LCA helped to identify the impacts across the various stages, for example, noting that the usage stage of the uniform polo shirt accounted for 80% of its total energy impact because of the frequent washing, drying and ironing. Once the LCA was performed and priority areas for redesigning the uniform were highlighted, C2C was revisited to select materials, and processing elements such as dyeing that would be sustainable but also functional. The wrinkle-free, fast drying redesign allowed for lower washing temperatures, no need for ironing, and quick drying and even incorporated a closed-loop process supported by a company in Japan which produces its own fibres and then accepts them back at end of use to be upcycled. This highlights a need for a properly functioning recycling system that can operate in as C2C a way as possible. Performing the LCA on the new design, a 74% reduction in energy consumption was noted as well as a 68% decrease in emissions compared to the old design. This case acts as an example to show that LCA and C2C can be used together. Without the C2C, the redesign would not be able to be part of a closed-loop program, however without LCA, the use phase might have gone underestimated.

Conclusion

It has been argued that there is a large-scale case of environmental injustice in the (fast) fashion industry, which presents itself in the lack of sustainability of the clothing, and the processes required to produce them. Examining the stages of a fast fashion product, it is evident that environmental justice problems are present across every stage, but the design stage holds the highest potential for effectively helping the entire life span of a fashion garment be sustainable. The injustice according to the cradle-to-cradle account is present because of a lack of respect for nature's diversity and because the way products are designed reflect this. Environmental justice asks that nature be treated fairly and thus not being exploited for its natural resources or abused by making it the dumping ground of materials that it cannot absorb in a healthy way. C2C encourages that we not only see nature for its instrumental value to us, but for us to see ourselves as part of the larger system of nature that has value in itself as well relational values, in the form of, for example sacredness. Once we are able to appreciate from a more open-minded perspective, we can take into consideration its biodiversity and ecosystems when designing products – this is key to upholding environmental justice.

Among some drawbacks of the C2C justice theory is the glaring realisation that it does not say who holds the duties to ensure environmental justice. To some extent, it could be argued that we all can do our part by being more mindful towards nature, but when it comes to ensuring that products are designed in a way that upholds justice, most people would be lost. Inspired by existing theories of allocating responsibilities, this thesis has argued for a multi-principle view that prioritizes the principle of capacity as the key determinant to the extent according to which someone ought to be held responsible. Capacity is given most importance in duty allocation as a result of the discussion regarding the other principles, but also because it is most relevant to the practical demands of C2C as a justice theory. Furthermore, without a party having the capacity to act on their responsibility, allocating such responsibility is redundant.

Given the demands of the C2C justice theory and the weight of capacity in upholding justice, it is argued that fashion brands have the greatest moral responsibility towards nature in the fashion industry. This responsibility is not exclusively left with fashion businesses, other parties can play a role as well, and perhaps through some collaboration between parties, environmental justice can be even upheld more effectively.

What has been argued for might seem too obvious – would anyone truly disagree that if there is a responsibility for environmental injustice in the industry, then the fashion brands should be the first in line with duties to bring it about? Quite probably anyone who would disagree, would also disagree with the idea that there is an injustice towards nature taking place at all or insist that nature is free to use in a 'survival of the greediest' manner. Otherwise, my guess is that people would agree with what has been argued for. However, in an environmental crisis this extreme, it is not as much about whether people agree that something should be done and by a certain party, but about whether they do act on their beliefs and whether they have good reasons to do so. As the situation currently stands in practice, it is not *evident* that fashion brands or governments agree with what I have argued for. Perhaps it is still too soon to see the urgency of the implications environmental injustice has and therefore it is cast aside. Otherwise, perhaps the lack of clear understanding of the moral significance of environmental issues and the lack of justifications for why one has responsibilities to make the fashion industry just has put the process at a standstill. Currently, in practice financial values are clearly still prioritised over the values of the environment, whether anyone explicitly argues for them or not. But it has not been the aim to merely point a finger at who is most duty-bound. Rather it has been the aim to also put in one place and explain the dire situation the environment is in because of what goes on in the fashion industry and its moral significance, whilst offering a new perspective and reasons to change the situation.

In future research, the C2C justice theory would benefit from a lengthier and more sophisticated account that can address its unfinished business. One are of enquiry might be to what extent is the closed loop-cycle wanted? As mentioned in the fourth chapter, in practice it might not be possible to have a fully closed-loop material cycle. This would mean that unavoidably nature would be faced with materials it cannot

process. But where do we draw the line – is it at the point of capacity of the duty bearer? This brings forth a further question that would be interesting to address in the future. In the case of the fashion industry and the responsibilities to businesses, what counts as making businesses worse off in a morally significant way? Foe individuals it might be less of a challenge to identify morally relevant factors that excuse us having duties, for example, cases where upholding a duty sacrifices a basic human right or puts the individual below a certain standard of living. What is morally relevant for a business? Should businesses' duties be excused at the point when people start to lose their jobs, or is it when a business is operating at a financial loss, perhaps something else? If we agree that a large part of fashion businesses responsibility comes from their capacity to uphold justice without sacrificing something of moral significance, it would be imperative to know what counts as something of moral significance.

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