



RECYCLING MARINE DEBRIS

An inquiry into the discrepancy inherent in posing recycling marine debris for new consumer wear as a solution to the problem of marine debris pollution.

Manon Z. Jurgens, MSc.
1017632

Supervisor: R.J. Geerts, MSc.
Examiner: Prof. dr. C. Aydin

Master Thesis
MSc Philosophy of Science, Technology and Society

Faculty of Behavioural, Management, and Social Sciences
Enschede, the Netherlands

October 2016

UNIVERSITY OF TWENTE.

Acknowledgements

I thank Robert-Jan for his interest in this project, the stimulating discussions we had, his constructive criticisms on my writing, and positive remarks on even my most shaky ramblings. I thank Ciano for his interest in this project as well, and his constructive and useful comments. I thank Michael for initially embarking on this project and getting me going with a good start, for his enthusiasm, and for his continuing interest in what I do and have created. I thank Myrna and Christian for their so valuable ideas. I thank the PSTS teachers and affiliates, my friends, and my peers for their ideas, comments, and help, especially by making my time as a PSTS student and outside of uni worthwhile. I thank Frank for always managing to put me in a good mood and for urging me to try and get better and don't ever accept less. I thank Huub for wishing to write a song that could clean the oceans. Since he cannot do so, we must see what else we can do. I thank my parents for always supporting me and being interested in what I do. I gladly try to make them proud. I thank my Moose for being crazy and amazing and everything in between.

Den Haag, October 2016

Summary

Marine debris poses a profound threat to the health of the marine environment. Ideas for remedies and solutions to this problem vary, as well as recognition of the necessity of and responsibility for these solutions. One such solution is the recycling of collected marine debris into new shoes, made by Adidas partly from fishing nets that Parley of the Oceans collected from the marine environment. Seeing that marine debris is to a large extent the result of improper management of waste that follows from consumption, an incongruity arises in posing the solution to be one based on consumption. This leads me to ask the following question, how does recycling marine debris for new consumer wear provide a solution to the presence and continuance of marine debris by making use of consumerism?

When asking such a question, it is important to have an understanding of what marine debris is and of the frame in which marine debris is represented. The material may be wood, glass, or plastic, and may have been deliberately or accidentally discarded on land or at sea. In the persistence, ubiquity, and durability of the waste that becomes marine debris lies the core of the problem for the marine environment and as the debris is and will be everywhere throughout the marine environment, finding a comprehensive, immediate and sustainable solution is tough. I use the concept of sociomateriality to explore the framing of marine debris as it enables us to interpret framing of marine debris as a threefold notion: material, technological, and social.

With the recycling of marine debris for new consumer goods the marine debris as a whole or collection is opened up. The changing situation can be described using the theory of disembedding and networking as understood by Briggie and Mitcham (2009). Interesting in this case is that the separate parts that make up the whole become visible and they, as well as the marine debris whole, become part of a larger network upon the reintroduction into society. As a result, the marine debris whole continues to exist in the marine environment, materially, and in the new products, ideally, while at the same time the recycled parts disappear into the new products.

Wong's (2012) interpretation of the writings of Zygmunt Bauman serves as a tool to delve deeper into the position of waste, marine debris, and recycling in consumer society. Stating that the Adidas x Parley shoes actually form a solution to the problem of marine debris contributes to the reinforcement of the conditions for and values inherent to consumer society. Because the Adidas x Parley shoe hardly challenges the foundations of consumer society, but rather adheres to it to a large

extent, consumer society and its foundations are sustained. What it does, rather, is create a cycle in the process that matter runs through from being raw material to being waste, making the matter run through the stages of being raw material, product, and waste twice.

Part of the marketing of the shoe is an attempt to close the experiential gap, which is the discrepancy between the experience of autonomy and freedom, while the reality is actually interdependence. Adidas and Parley for the Oceans propose – in a marketing line – that their shoes are a solution to the marine debris problem and that they aim to create awareness in consumers of the problem. But there appears to be no attempt at the creation of an imperative to adjust behaviour on their end. Through this emphasis on the shoe's history as marine debris and claim they implement a moral dimension in the the consumption of their shoes to create the cluster of consumer and anti-consumer as described by Žižek. He argues to prevent the consumer – anti-consumer from forming as the solution does not lie in the act of 'green' consumption. It is in the lack of restructuring of the consumer culture that the basis is lost for claiming that the creation of shoes from marine debris solves the problem of marine debris.

The framing of marine debris was affected by the recycling of marine debris as the material returned to society in the form of new products with its history visibly attached to it. As such it did not only physically become part of society again, but also in an economical sense. Furthermore, consumers become aware of the idea of marine debris as it is connected to everyday products through technological possibilities. Through the Adidas x Parley shoe marine debris and consumer society have become connected in a larger network and in this network the shoe has become present in society in a way that falls rather in line with consumer society. The fact remains that the shoe relies and addresses heavily on the consumer wish of property accumulation.

The Adidas x Parley shoe shows that it is possible to turn marine debris into a valuable and useful resource material, but that it is difficult to use just one product to address the entire issue of marine debris. Even though they claim to provide a solution with the shoe, the matter is more complex than they let believe. What this shoe does provide is insight in the possibilities of marine debris as a resource and that such attempts should downsize the reliance on consumption to make the effort worthwhile.

Table of Contents

Chapter 1 An Introduction to Recycling Marine Debris.....	9
The Issue of Marine Debris	10
Impacts of Marine Debris	12
Solutions to Marine Debris Pollution	13
The Question of Recycling Marine Debris	15
Problem Statement	17
Thesis Outline	18
Chapter 2 Sociomateriality of Recycling Marine Debris	19
The Sociomateriality of Waste	19
The Sociomateriality of Marine Debris.....	25
Chapter 3 Disembedding and Networking	29
The Marine Debris Concept.....	30
The Theory of Disembedding and Networking.....	33
The Disembedding and Networking of Marine Debris.....	37
Conclusion	41
Chapter 4 Recycling Marine Debris for Consumption	43
Bauman’s Notion of Consumer Society.....	45
The Situation of Debris in Consumer Society	48
The Specific Case of Recycling Marine Debris	49
The Matter of Consumer Identity.....	52
Chapter 5 Concluding Comments	55
A Quick Recap.....	55
Conclusion	57
Implications and Limitations	58
References	60

Chapter 1 An Introduction to Marine Debris

Taking a look at beaches, rivers, and oceans across the globe shows a variety of products that pollute the marine environment. Cans, plastics bags, bottles, diapers, fishing nets, but also toothbrushes, toys, shopping carts and bicycles end up in the marine environment where it poses a profound threat to wildlife and humanity. Although the first accounts of the problem arose already in the 1960s and 70s, the severity of the impact on the marine environment has been recognised only recently. It has increasingly moved into the focus of scientists, non-governmental organisations, policy makers, and the broader public.

For decades research and practices aimed at finding out sources and impacts of marine debris. Plastics are thereby recognised as the main and is the most well known contributor, while they do not necessarily constitute the only material that the debris consists of. Due to their detrimental nature in the marine environment, marine debris must be prevented to reach the marine environment in the first place. Even further goes the goal to prevent products from becoming debris in the first place. The global goal is therefore to tackle the problem of marine debris by preventing new debris to make its way to the oceans and by cleaning up the oceans from the debris that is already there. Ideas to do so strongly relate to general waste management practices, such as recycling. In order to execute this two-fold approach and reach the desired objective, it is important to first understand the issue thoroughly.

With this thesis, I do not aim to provide an exhaustive comprehension of the massive scope of the marine debris issue. Rather, I intend to provide an exploratory introduction to the sources, impacts, and solutions to the marine debris issue, and to provide an understanding of the issue on increasingly abstract levels in view of a specific type of solution, namely the recycling of marine debris for new consumer goods. It seems inevitable that we must change our practices in order to provide a solution to the problem that marine debris poses (Thompson, Moore, Vom Saal, & Swan, 2009). In this thesis I aim to assess what an example of such a technology-influenced change of practice means in the social environment, specified for this thesis as marine debris management and consumption practices.

In the current chapter I address the issue of marine debris in terms of its situation at the moment, its causes, and the impacts it has on society, economy, and the environment. By means of this mapping of the issue I explain why it is a problem that needs to be addressed. I will in this chapter also

introduce technological solutions to the problem that are already proposed and implemented, as technological innovations offer some potential to address the issue of marine debris (Coe & Rogers, 2012), in order to set the stage for my research question.

1.1 THE ISSUE OF MARINE DEBRIS

Marine debris is not simply ugly when it washes ashore or floats on the sea surface, but it can be harmful to ocean ecosystems, wildlife and humans, as well as the economy (NOAA & UNEP, 2011). Marine debris includes any form of manufactured or processed material discarded, disposed of or abandoned in the marine environment. It consists of items made or used by humans that enter the sea, whether deliberately or unintentionally, including transport of these materials to the ocean by rivers, drainage, sewage systems or by wind (Galgani et al., 2010).

Marine debris is made up of all sorts of materials and products, and has both land as well as marine sources. The greater part of marine debris originates from land based sources from where it washes out to sea via rivers, streams, and storm drains (Bergmann, Gutow, & Klages, 2015). When goods and products are discarded, it can consequently enter the coastal or marine environment as it can be transported over long distances by ocean currents and tides (Watters, Yoklavich, Love, & Schroeder, 2010). This debris is comprised of general litter that is left behind on beaches by recreational users of the coastal area, litter from industry, harbours and unprotected landfills, litter that was dumped or accidentally spilled, sewage overflows, and extreme events (Bergmann, Gutow, & Klages, 2015). Marine debris with an ocean based source may be properly or improperly disposed trash from boats, national disasters, abandoned fishing gear (lines, nets, ropes and more), and industrial activities at sea (Bergmann, Gutow, & Klages, 2015).

Marine debris is a global problem, but concentrations vary widely in time and space (Thompson et al., 2009) which makes it a dire problem for some and conceals it from the eyes of others. For instance, I don't see marine debris when I visit the Dutch coast near where I live, but would I have visited Mumbai, India's Versova beach a year ago I would have been standing shin deep in rotting litter. Since October of the previous year, efforts have been made to clean up this 2,5 kilometer long beach. In August of this year, volunteers had scooped up a total of two million kilogram of waste (UNEP, 2016). Estimations by Eriksen et al. that were published in 2014 show a minimum of 5.25 trillion plastic particles weighing 268.940 tons afloat in the sea.

Marine debris' distribution in the marine environment shows considerable spatial variability (Bergmann, Gutow, & Klages, 2015; European Commission, 2011). To a large extent it aggregates in ocean gyres when it does not wash up ashore (which is commonly included in the marine

environment), accumulates in a bay, or sinks to the ocean floor, but the amount and density of the debris is different in different regions. The highest concentrations of accumulated debris are found in the Northern Hemisphere, corresponding to urban centres, enclosed seas and water convergences (Barnes et al., 2009). Lower concentrations are found on remote island shores and the lowest concentrations are found in the deep sea and the Southern Ocean (*idem*).

The variability in marine debris' distribution is due to variances in local winds and current conditions, the geography of coastlines, and the points of entry into the marine environment of the debris (Barnes et al., 2009; Watters, Yoklavich, Love, & Schroeder, 2010). Plastics can travel especially far because of their low density, making them easily dispersable by water and wind, sometimes thousands of kilometers from the point where they entered the marine environment (Ryan et al., 2009).

This considerable geographical variety and temporal increase vastly increases the problem scale, making it a ubiquitous, pervasive, global, and growing problem. Plastics thereby attract the bulk of attention. There are several key issues with plastics in the marine environment. First, plastics are highly durable because they fully disintegrate at a painstakingly slow pace (Bergmann, Gutow, & Klages, 2015). They do break down into smaller particles and this degradation of the larger plastics leads to an abundance in small microplastics. Some degradable plastics are even designed to break down into small particles, but the resulting particles are not necessarily degradable themselves (Roy, Hakkarainen, Varma, & Albertsson, 2011). Although plastics do break down, they do not do so fully, meaning that they continue to exist in the marine environment as smaller particles. This durability of plastics makes them particularly worrisome, because it means that they will persist in the environment for many years (Ryan in Bergmann, Gutow, & Klages, 2015; Thompson et al., 2009).

Second, plastics are highly ubiquitous in the marine environment (Bergmann, Gutow, & Klages, 2015). The ability of plastics to disperse easily makes them ubiquitous pollutants in even the remotest areas in the world (Barnes et al., 2009). They are lightweight which makes them float mostly on the surface of the sea, being immediately visible to attract attention (GESAMP, 2015). Additionally, the proportion of plastic products increases with the distance to the source area as they transport more easily than heavier and denser materials such as glass (Ryan et al., 2009). A large proportion of the plastic disappears from view, as it sinks to the ocean floor, washes up ashore, or disintegrates (Eriksen et al., 2014). The plastics remain buoyant until they become too heavy to float, because they are saturated with water or too many epibiotic organisms grow on them to float (Barnes et al., 2009; Bergmann, Gutow, & Klages, 2015), causing them to sink to the ocean floor (Thompson et al., 2009). Photographs of the ocean floor identify objects such as bottles, cans, all

sorts of marine equipment (fishing gear such as nets is particularly harmful for marine life) and other refuse.

Thirdly, plastics make up the largest part of the debris that accumulates in the marine environment (Bergmann, Gutow, & Klages, 2015). They are not relatively more littered than products such as paper, paperboard, or wood (Bergmann, Gutow, & Klages, 2015) as they constitute only a small proportion of discarded waste (Barnes et al., 2009). Most of the threats posed by plastics occur at sea (Gregory, 2009; Thompson et al., 2009), where waste plastics tend to accumulate (Barnes et al., 2009; Ryan et al., 2009). It is their durability and the fact that they disperse easily that makes them float further away, disappearing from view and management.

While in the 1980s the impacts of marine debris were thought to be reasonably well understood (Ryan in Bergmann, Gutow, & Klages, 2015), the degradation of larger plastics leads to an abundance in small microplastics and the environmental consequences of this type of marine debris is still only poorly understood (Barnes et al., 2009). There is, however, consensus on the danger of this sinking and degradation of plastics. While the durability of plastics is estimated to be hundreds to thousands of years, this increases even further in the deep sea (*idem*). Small fragments of plastics are difficult to remove from the marine environment, they are easily ingested by a wider range of organisms than larger plastic items, and it is suggested that the fragments can transfer harmful chemicals to marine organisms (*idem*). Alternatively, microplastics can enter the marine environment by their direct release through spillage of plastic pellets and powders that are used as abrasives or materials for manufacturing plastic products (Thompson et al., 2009). Even if this anthropogenic impact by discarded goods and products on the marine environment is stopped immediately and completely, it will persist for centuries to come (Barnes et al., 2009).

1.2 IMPACTS OF MARINE DEBRIS

Research into the impacts of marine debris on the marine environment has steadily increased since the problem was recognized in the early 1970s, starting out with reports of the ingestion of plastics by seabirds (Harper & Fowler, 1987). Several decades of research has shown that the impacts of marine debris on the marine environment and sea-life are injury of coral reefs and bottom dwelling species, and entanglement or drowning of ocean wildlife, a problem that appears to have increased over time (Ryan et al., 2009).

Some species, reportedly over 260 species, ingest marine debris, among which are invertebrates, turtles, fish, seabirds and mammals (Thompson et al., 2009). The ingestion of marine debris potentially causes the animal to choke or starve through impairment feeding, lacerations, or ulcers,

ultimately causing an untimely death of the animal (*idem*). The ingestion of marine debris is especially prevalent in species that mistake plastics items for their food and the incidence of ingestion can therefore be particularly prevalent in seabirds (*idem*).

Besides these impacts for sealife, floating marine debris also has the potential to impact the dispersal of non-native or 'alien' species throughout the marine environment as the debris becomes colonized by marine organisms and persists on the sea surface (Thompson et al., 2009). Additionally, medical waste, such as syringes, often contains harmful bacteria and pathogens that may be hazardous to beachgoers or fauna (Barnes et al., 2009). It also poses a threat to fishing activities as discarded fishing nets may result in ghost fishing, whereby derelict fishing gear catches fish, or fishing nets may get stuck in debris, both of which may cause losses to commercial fisheries (Thompson et al., 2009).

This exploration of the impacts of marine debris clearly show that marine debris is harmful for the marine flora and fauna, for the health of humans, and for the economy. Even regardless of these impacts, our current practice is not sustainable. In our strive for a better product that fits our needs and increases the comfort of our day to day life, we created products that have properties that make them so fantastically useful and a significant environmental threat at the same time (Ryan in Bergmann, Gutow, & Klages, 2015). In order to overcome, and prevent, these adversary effects it is important to think of all stages of the product's life. This means that we have to consider what we can do to make more sustainable products, use products in a more sustainable way, dispose of products in better ways, and to clean up the results of unsustainable handling of waste.

1.3 SOLUTIONS TO MARINE DEBRIS POLLUTION

Marine debris has attracted worldwide attention and has prompted action by government agencies, private enterprises, environmental groups and citizens (Bergmann, Gutow, & Klages, 2015). Endeavours by this variety of organisations aim to solve the problem of marine debris by cleaning up the debris and to prevent all types of debris from entering waterways and oceans. Four proposed ways of doing this are to reduce the amount of generated waste, to reuse items, to recycle materials, and to recover energy from the waste through incineration (Hopewell, Dvorak, & Kosior, 2009).

UNEP (2015) explains that the principal reasons that marine debris ends up in the ocean are inadequate waste management, illegal dumping, common littering, accidental spillage from activities in the maritime sector, and a lack of awareness on the part of consumers. The efforts to resolve this issue focus to a large extent on reducing the introduction of waste into the ocean or beaches, for instance in the case of NOAA & UNEP's Honolulu Strategy (2011). But while such efforts aim to improve waste management and influence behavioural changes, such measures may take many

years to show benefits (GESAMP, 2015). Additional measures such as improving plastics to make them more biodegradable, do not present a complete picture of possible efforts to solve the issue of marine debris.

One of the fundamental problems with these processes of waste management is the limited potential for wide-scale reprocessing of items. Substantial distances have to be overcome and complicated logistic arrangements have to be made to bring the product back to its supplier in order to prepare it for reuse (Thompson et al., 2009). The same, to a lesser extent, holds for the preparation of disposed items for recycling and energy recovery. Additionally, even though the energy content of a plastic item may be recovered through incineration, which is beneficial compared to landfill, it does not create a sustainable solution to the issue. Although there is some energy content recovered in plastic materials through incineration, there are concerns about emissions from the incineration process. Second, the recovery of energy does not help in the reduction of the demand for raw materials for new products.

A second fundamental problem is that the used design criteria in new developments of plastics hardly ever include specifications that specifically address reusability, recyclability, or energy recovery after the end of the plastic's (initial) commercial life (Thompson et al., 2009). As a result, what happens after the end of the product's lifetime is not taken into account in the design of the product. Such assessments are only made when adverse effects are on the verge of appearing or have begun to appear (*idem*). In order to address this problem, practices that favour redesign for more sustainable products have appeared. An example is the molecular redesign of plastics, wherein 'green chemists aspire to design chemical products that are fully effective, yet have little or no toxicity or endocrine-disrupting activity; that break down into innocuous substances if released into the environment after use; and/or that are based upon renewable feedstocks, such as agricultural wastes (Thompson et al., 2009, p.2161).

Because marine debris has no geographic or political boundaries, there lies a challenge in the organisation of possible solutions as they rely on international partnerships and a global scope. The Ocean Conservancy, for instance, recommends solutions in general terms that focus on monitoring and reducing marine debris, research into sources and impacts, and better technological solutions. Plastic makers and organisations like National Oceanic and Atmospheric Association (NOAA), United Nations Environment Programme (UNEP) and the Plastic Soup Foundation address the problems that marine debris poses. Projects such as 'The Ocean Cleanup' (2016) aim to help solve the problem by cleaning up marine debris from the marine environment, which in the case of the Ocean Cleanup means the collection of debris from ocean gyres, in which the ocean debris centralises.

1.4 THE QUESTION OF RECYCLING MARINE DEBRIS

The project Ocean Cleanup (2016) works with a system to clean the oceans from plastic waste by setting out networks of floating barriers. They then extract the plastic for recycling. The project thereby regularly informs the public about the technology, 'raising awareness of the plastic pollution problem and promoting prevention'. They intend to deploy similar systems in rivers in future to intercept the plastic flowing into the ocean. What projects like this one try to achieve is the cleanup of large- and medium-sized debris on sea shores and ocean surfaces. At the same time, such projects encourage recycling and discourage littering while working to clean up marine debris. They aim to advance scientific understanding of the problem and promote industry wide practices that reduce the use and the environmental impact of marine debris, while increasing the possibility of reusing and recycling the materials.

The focus on recycling leads to projects that use collected marine debris to make new commercial products, such as shoes or clothing. The sportswear brand Adidas together with Parley for the Oceans, a platform for artists, journalists, and scientists (a.o.) to collaborate and raise awareness for the destruction oceans, for instance, launched a prototype of a pair of running shoes that is partly made of plastic recovered from the ocean (Dezeen, 2015a). Clothing brand G-Star launched Pharrell Williams' third collection of clothes that was partly made from ocean plastic (Dezeen, 2015b). Such practices create the impression that a consumer helps to save the oceans and helps address the marine pollution problem by purchasing consumer goods made from recycled marine debris. It builds awareness of the issue with the public and encourages to inhibit littering, but is this really a way to get and to keep debris out of the oceans?

As Adidas puts it: "We at Adidas didn't partner with Parley to take incremental small steps. We partnered with Parley to make big bold steps, to *fix* big global problems." (Parley for the Oceans, n.d., author's emphasis). How does a project that makes shoes partly made out of marine debris *fix* a big global problem? To what extent does it even add to a solution? To what extent may it be considered to be the *right thing*? How effective is such a tactic really? How much debris will be removed from the marine environment? And how much of the collected debris returns to the oceans again after these consumer products are discarded once more? Does it create awareness of the issue and, if so, does this awareness help solve the issue? When marine debris is turned into new products, what does that mean for our understanding of the notion of marine debris and as an issue? Is the term 'marine debris' increasingly symbolic and does it actually symbolise a storehouse of raw materials?

Adidas and Parley for the Oceans, G-Star, and innumerable other project makers aim to increase awareness in consumers of the problem that marine debris poses, but do consumers need to be aware of the possibilities of recycling practices or do consumers need to be aware of the consequences of their consumption practices? Striving for awareness appears largely to suppose an increase in recycling practices in the general public as a result, but is this sufficient if it works at all? Secondly, creating awareness of the impacts of (excessive) consumption by marketing consumption goods seems to be an inherent discrepancy that is difficult to overcome.

Put generally, my question on such projects is whether such technological solutions actually are the solutions they are presented to be. Additionally, what do they mean in relation to the cleanup of marine debris and what is left of the meaning of marine debris itself? The basic principle of recycling is that end-of-life and disposed items are considered to be raw materials rather than waste (Thompson et al., 2009). But already in the general practice of recycling items for new goods there are considerable issues to be overcome. First of all, the end-users of products have to be engaged in the practice of recycling (Thompson et al., 2009). Although consumers may be keen to recycle, incomprehension of symbols that indicate the potential recyclability may hinder consumer commitment.

Furthermore, there may be doubts as to whether a product that has been put up for collection will actually be recycled, as it may not be possible that all items put up for collection are actually fit to be recycled. Composite items and mixed wastes are currently not available for recycling (Hopewell, Dvorak, & Kosior, 2009). Thompson et al. (2009) therefore argue to increase the capability to recycle by 'designing products for better end-of-life recyclability' (p. 2160) and to regard items at the end of their commercial life as valuable raw materials, rather than waste.

While at first sight it might seem like a good idea to rid the marine environment from debris and to give this marine debris a purpose again, it is unclear whether the idea surpasses the ideas that created the necessity in the first place. Do such projects actually aid in providing a solution to the problem that marine debris poses, or do they feign to be a solution by forming an extra loop in the chain? While creating awareness for the problem, they create new consumer goods of which it is highly likely that they will be discarded at, or even before, the end of their lifetime like the products that they were initially made off. What, then, do they mean as part of the solution to the marine debris problem and how do they affect the perception of the marine debris problem? How does it affect the place of marine debris within society?

1.5 PROBLEM STATEMENT

Greatly underexposed is the relation between marine debris and consumption practices. Oftentimes we throw products away without thinking twice and replace it with something new. We are unaware of where the discarded product goes and where the new product comes from. Research on waste management has largely focused on technological solutions leading to reuse, recycle, and redesign. While this is important, they do not represent solutions to the broad scope of the problem. They appear to be technological fixes in the sense that they are limited and partial solutions that together do not add up to one complete solution. Such measures forego the increase in production of products, and do not sufficiently address the increasing consumption levels. Social and cultural changes can be complementary to these technological solutions to address consumption, since consumption is a driving force behind production and therefore a potential direction to intervene (Ekström, 2014).

While on the one hand it is important that marine debris is collected from the marine environment, not every proposed solution solves the problem of marine debris that we face. Not only is removing it only a long-term solution if the supply of debris to the marine environment is stopped. It is also only a solution if it does not in turn recreate the same problem over again.¹ In the case of the Adidas x Parley shoe, there is a discrepancy inherently present in their solution to the problem of marine debris. They aim to create awareness of the impact of (excessive) consumption by marketing consumption goods.

The problem that Adidas and Parley for the Oceans intend to solve is the pollution of the marine environment by waste that harms the environment and the lack of awareness of this problem in society. A solution proposed by Adidas and Parley for the Oceans is the collection of the waste from the marine environment and turn it into a resource by recycling it for new consumer footwear. This project removes marine debris from the marine environment and puts it to new use, as well as educating people about marine debris. The proposed solution thereby relies on consumption – in general and of the product-, a certain level of popularity of the product, and a willingness of people to be educated about marine debris. There is much room for these requirements not to be met, making the proposed solution less straightforwardly successful than it at first glance may seem.

¹ It could here be added that a solution is only a solution if it does not create a new problem in turn, but this is no place to discuss what is a solution. I shall therefore continue on the premise that a solution to one problem may create new problems in turn without losing its validity as a solution to the initial problem.

Although Adidas and Parley for the Oceans do not in all of their communications pretend that this particular solution solves the entire problem, they do strongly hint at it at times. The discrepancy here lies in that Adidas and Parley of the Oceans target the problem that results from improper management of the rest-product of consumption by creating products for consumption. There is no guarantee that this is different than the inclusion of another loop in the production-consumption-disposal chain, which would result in the recreation of marine debris out of the recycled shoes.

The question is whether the discrepancy in the Adidas x Parley solution shows the solution to be a technological, band-aid fix or a genuine way to rid the marine environment of its debris. In other words, how does recycling marine debris for new consumer wear provide a solution to the presence and continuance of marine debris by making use of consumerism? There are two parts to this question. The first element regards the displacement of marine debris and the question is how recycling marine debris for new consumer wear connects marine debris to the social environment? The second element is the question: how does recycling marine debris for new consumer wear use consumerism?

1.6 THESIS OUTLINE

When asking such a question, it is important to have an understanding of what marine debris is and of the frame in which marine debris is represented. The material may be wood, glass, or plastic, and may have been deliberately or accidentally discarded on land or at sea. In the persistence, ubiquity, and durability of the waste that becomes marine debris lies the core of the problem for the marine environment and as the debris is and will be everywhere throughout the marine environment, finding a comprehensive, immediate and sustainable solution is tough. In chapter 2 I use the concept of sociomateriality to explore the framing of marine debris as it enables us to interpret framing of marine debris as a threefold notion: material, technological, and social. Chapter 3 uses the theory of disembedding and networking by Briggie and Mitcham (2009) to understand what happens with the frame of marine debris as it is recollected and recycled for new consumer wear. Chapter 4 addresses the relation between recycling marine debris and consumption. Using Wong's (2012) interpretation the writings of Zygmunt Bauman served as a tool to delve deeper into the position of waste, marine debris, and recycling in consumer society. Additionally, I discuss the part of the marketing of the Adidas x Parley shoe that is an attempt to close the experiential gap by implementing a moral dimension in the consumption of the shoe. In chapter 5 I respond to the research question and discuss implications of my analysis and conclusion.

Chapter 2 Sociomateriality of Recycling Marine Debris

In their teaming up, Adidas and Parley for the Oceans collect plastic marine debris and give it a future as a product that consumers can wear. They thereby establish an essential connection between marine debris and society. This connection is essential to both their solution and their goal. Because their solution is to introduce marine debris to society in the form of a recycled product, it is fundamental that the new product gets a place in that society – people (consumers or not) need to see it and think about it. It is only by establishing this connection that the goal might be achieved. This goal – to address the ocean plastic pollution by the creation of awareness while removing debris from the marine environment – relies on recognition of the product by people. Recycling marine debris like the case of the Adidas x Parley shoe is thus not a simple matter of processed material. Rather, it is complex and reliant on different dimensions to work in unison.

To understand whether the Adidas x Parley shoe works to achieve its goal relies on understanding what it entails. Due to its tremendous reliance on the connection between marine debris and society it is important to dig into this relationship and investigate its dimensions. In order to do so I turn to Hultman and Corvellec (2012), who discuss the idea of a future for debris using the term ‘sociomateriality’. Since this concept originates in both organisation studies and sociology of technology, it is important to discuss its meaning originally and Hultman and Corvellec’s interpretation of it. After this discussion I apply the sociomateriality concept in order to understand the dimensions present and important in connecting marine debris to society.

2.1 THE SOCIOMATERIALITY OF WASTE

In their discussion of the European Waste Hierarchy in relation to the evolution of applied industrial ecology, Hultman and Corvellec rely on the term ‘sociomateriality’. The emphasis on circular material management in the European Waste Hierarchy creates a perception of the role of waste from useless leftovers to waste as a risk and a resource. This makes it problematic to uphold the term waste, because waste implies uselessness and worthlessness.

The concept of ‘waste’ is defined by the EU directive (2008) that discusses the European Waste Hierarchy as ‘any substance or object which the holder discards or intends or is required to discard’ (p. 9), and the ‘waste holder’ meaning ‘the waste producer or the natural or legal person who is in possession of the waste’ (p. 9). Waste is no longer waste when it has undergone a recovery operation

in line with certain criteria, whereby the recovered substance or object must be commonly used, have a specific purpose and demand for it, meets standards and legislation, and does not have adverse effects on the environment or human health (EU, 2008). For convenience and understanding I will uphold the term waste following the example of Hultman and Corvellec (2012).

Waste in general poses a risk because improper management has undesirable and hazardous implications, and it is up to society to deal with waste to avoid these possible problematic consequences when products reach the end of their lifetime. Additionally, waste is termed a resource that is economically desirable and can be sold to be reintroduced in a production process. Waste can thereby serve as a complement to raw materials for manufacture and a replacement of raw materials. Hultman and Corvellec term the position of waste within waste handling and management the sociomateriality of waste. They define this sociomateriality of waste as “the presence of waste in society, the ways in which waste is defined and dealt with, and the effects this has for society and the environment” (p. 2413).

2.1.1 The concept of sociomateriality

The concept of sociomateriality has its origin in both sociology of technology and organisation studies. It came into use through the realisation of scholars that materiality is a constructive element of the social world and the other way around. While ‘the social world’ or variations of the term is often assumed to have a straightforward meaning, indicating interpersonal relations, institutions, norms, discourses, activities, etcetera, the meaning of the term ‘materiality’ is less straightforward.

A general definition provided by Leonardi (2012) is the following: “The arrangement of an artefact’s physical and/or digital materials into particular forms that endure across differences in place and time and are important to users” (p. 29/31/42). The physicality of the artefact is hereby less important and the emphasis is rather on the continuing (stabilised at a certain point but able to evolve) properties of the artefact. The materiality of a technology is what enables the technology to perform certain actions and inhibit or disrupt the performance of others (Faraj and Azad, 2012).

Leonardi (2012) summarises the usefulness of the concept as a two-fold answer to the question why we need this relatively new concept. First, because “all materiality is social in that it was created through social processes and it is interpreted and used in social contexts” (p. 32). In the history of the sociology of technology and its focus on technological development, the idea is that the boundaries that distinguish materiality from its social context have been artificially established. Additionally, they are actually not so much predetermined as several theories have convincingly shown that social processes strongly affect materiality and vice versa.

In organisation studies the focus has mainly been on the adoption and use of an organisation's social system and the way an artefact merges with this system. Thus, as within the context of technologies and organisations the social context, practices, and processes shape the materiality and its effects, and vice versa, it makes sense to break down the strict separation between the social and the material.

Second, the notion of sociomateriality is useful because "all social action is possible because of some materiality" (Leonardi, 2012, p. 32), which is the other side of what the term sociomateriality represents. The materiality is present in every social phenomenon and plays a constitutive role in social action. Interestingly, Leonardi (2012) jumps in his analysis from analysing the effect of materiality on social action to the effects of technology, and thereby equates materiality with technology, while the larger point he addresses is that materiality and social action become entangled to form a practice in which a technology is embedded.

Leonardi (2012) suggests that sociomateriality 'is not a property of a technology, but the recognition that materiality takes on meaning and has effects as it becomes enmeshed in a variety of phenomena (e.g. decision-making, strategy formulation, categorisation) that scholars typically define as social' (p.38). He terms the relation between the social and the material to be 'intertwinement' or 'imbrication', while Orlikowski (2007) uses the term 'constitutively entangled'. She describes this as "the social and the material are considered to be inextricably related – there is not social that is not also material, and no material that is not also social" (p. 1437). The space in which this entanglement occurs is the practice in which a technology is embedded (Leonardi, 2012).

It is this practice that is sociomaterial, instead of the technology or organisation that is the result of the entanglement. This, however, overlooks the technological dimension that is already present in materiality, as technology hardly ever does not pervade 'the arrangement of an artefact's physical and/or digital materials into particular [enduring] forms' (Leonardi, 2012, p. 29/31/42). While Leonardi appears to understand technology only as artefacts or material objects that most readily come to mind when one thinks of technology, it is only one of several interpretations of the concept.

In Mitcham's analysis of technology in his 1994 book *Thinking through Technology: The Path between Engineering and Philosophy* he shows that technology may be interpreted more broadly than Leonardi does. Mitcham comes up with different dimensions or modes of technology. He creates a typology of technology based on a historical analysis of interpretations, understandings, and established frameworks of the concept. This typology knows four distinct understandings of technology: technology as object, as knowledge, as volition, and as activity.

Technology as object is the dimension of technology that generally comes most readily to mind. It includes all fabricated material artefacts that are made by mankind with a specific function inherent in their materiality. Technology as knowledge are the true beliefs on the manufacture and use of artefacts. The justification of these beliefs lies in skills, laws, rules, maxims, and theories. Technology as volition is the will that applies knowledge onto the physical world for the creation of products, processes, and systems. Lastly, technology as activity is described by Mitcham to be 'the pivotal event in which knowledge and volition unite to bring artefacts into existence or to use them; it is likewise the occasion for artefacts themselves to influence the mind and will' (p. 209). Such activities include designing, inventing, and manufacturing, but also working and maintaining.

Coming back to Hultman and Corvellec's (2012) understanding of sociomateriality, "the presence of waste in society, the ways in which waste is defined and dealt with, and the effects this has for society and the environment" (p. 2413), the technological aspect is heavily prevalent throughout their understanding of the term. While Leonardi (2012) considers it impossible to see sociomateriality as a property of a technology, but rather as the property of a practice, Hultman and Corvellec do precisely that, with waste in this case being the technology. Hultman and Corvellec turn Leonardi's analysis around and consider a practice to be part of the sociomateriality of waste in order to understand the effects of the European Waste hierarchy. This hierarchy was established by the European Commission (2008) to set the basic concepts and definitions of waste management and to lay down principles for waste management.

Hultman and Corvellec (2012) discuss the European Waste hierarchy and its prioritisation of different types of waste management. They separate these ways of the handling of waste into two categories, one whereby waste is considered material that must be gotten rid off, and the other is waste as a product. The former category of waste entails exurban waste disposal or landfill and recovery of energy through incineration. The sociomateriality of these forms of waste management are dissociative, meaning that they promote to disconnect the consumer from the stipulations that underly production and consumption, both environmental as well as a social stipulations.

The latter category of waste as a product entails the recycling of waste, reuse of waste, and waste avoidance. These forms of waste management are associative (recycling and reuse) or reflexive (avoidance). Hultman and Corvellec attribute this change away from the dissociative sociomateriality of waste to two reasons. First, when products have reached the end of their commercial life and are regarded as waste they bring about problematic consequences due to the hazardous materials present in the product. Second, at the end of the product's commercial life it has become waste and

it therefore enters a second life as a commercial product. Waste has become economically desirable and valuable, and as such a product on the commercial market.

The avoidance of waste is aimed at not producing any waste at all. It is not necessarily aimed at decreased production and manufacturing of commercial products, but rather a decrease in premature and unnecessary disposal of such products and thus a decrease in material throughput. It encourages the redesign of products to make them more durable, careful use of products, and a focus on maintenance and repair rather than immediately purchasing a new product.

More associative are the practices of recycling and reuse that encourage, but also require, involvement of the consumer with the conditions that bring about production and consumption. The consumer is required to take an effort in considered disposal after deeming the consumed product to be waste. To some extent the consumer can be nudged towards waste separation, for instance by making it easier or cheaper than the alternative which disengages them from the actual process itself. However, as for the case of marine debris would be preferable and possible, the consumer may be nudged to take an effort in proper waste management by being actively involved in achieving the most optimal way of disposal.

The balance here is intricate as the required and encouraged involvement, in combination with consumer habits, are to be maintained in the most optimal way. As a result it is difficult to organise the extent to which consumers should be engaged and the relation thus is to be associative. The crux lies in the level of activity or passivity required for the associative relation. Not everyone shares interest in active involvement in proper waste management. Recycling and reuse thus rely on an optimal form of organising waste management to get the consumer engaged.

2.1.2 The three dimensions of the sociomateriality of waste

In the analysis of Hultman and Corvellec (2012) we can discern three dimensions of the sociomateriality of waste. One is the material dimension, which, in the case of waste, concerns the continuing arrangement of the physical materials that make up the waste. Products nowadays become increasingly more complex as a larger number of substances is used (Bartl, 2011), which affects the possibilities for managing the materials when they have reached their end-of-life. Additionally, the choice of materials is an important aspect of the material dimension as it greatly affects the possibilities and difficulties of managing the waste it becomes. Extraction of raw materials may be difficult, dangerous, expensive, or harmful, and the same holds for handling the material in production and use.

Another aspect of the material dimension concerns the increasing interest of waste as resource and secondary raw material. With this increasing interest in 'resource management' (Bartl, 2011) as a substitute for 'waste management' the focus on the materiality of products increases. This strongly relates to the technological dimension, which is apparent in the strategies of waste management in which the upstream stages are increasingly taken into account (Bartl, 2011). The ways of managing waste as expressed in the European Waste hierarchy range from disposal or landfill to waste prevention. The materiality of products affects the possibility of using certain ways of waste management. More complex products with an arrangement of many different materials is more difficult to reuse or recycle than products made out of a single substance. Additionally, the material itself can be more or less readily reused or recycled.

In turn, different ways of waste management require a different materiality of the product. Waste prevention, for instance, requires an arrangement of materials that is durable and reusable as the same product or a different one. As the actions to ensure reuse of products should be taken prior to the product becoming waste, Bartl (2011) terms it a way of constituting waste prevention. Disposal, on the other hand, requires less strict materialities of products that end up as waste. As it is problematic in itself due to the waste being toxic to the environment, different policies and practices may strongly influence both the material as well as the technological dimension of waste disposal, because waste trafficking is an option. Either legally or illegally the waste itself may be transported to countries with less strict regulations on waste disposal. Additionally, waste trafficking can be observed as polluting manufacturing processes located in or relocated to countries with considerably low standards on waste management. This gives the impression that we are doing well in Europe, while the problem is actually displaced (Bartl, 2011).

The technological practices of waste disposal, preparations for reuse, and recycling, as well as the waste and materials themselves, and irrespective of their materiality, form the technological dimension of the sociomateriality of waste. These modes of using waste carry in them the four dimensions of technology as explicated by Mitcham (1994). Technology as object is present in the waste itself, which consists of smaller or larger end-of-life objects, but is also itself an objects of sorts. Technology as knowledge is apparent in the skills and rules underlying the different practices of waste management to come to practices that adhere to the applicable terms and conditions as the EU, for instance, set out in her directives. This relates to technology as volition as these terms and conditions represent and come forth out of the aim and intention of the technology. Technology as activity, then, is present in the coming together of volition and knowledge to form the carrying out of the specific practice of waste management.

This dimension is closely intertwined with the social dimension. Technological artefacts reflect society, for instance, and affect this society in turn. This relation exists on both a personal or individual level, but is also present in groups, institutions, and countries. The elements of the technological dimension are partly due to the social context in which the technology is constructed as values, norms, opportunities, desires, and the like highlight what is currently important and possible. On the other hand it is the technology itself that affects what the social context in turn by affecting the 'shape of culture' (Mitcham, 1994) but also the human mind and will.

2.2 THE SOCIOMATERIALITY OF MARINE DEBRIS

The current emphasis on clean up of the polluted marine environment and consequent projects such as the Adidas x Parley shoe bring marine debris back into society where it needs to be dealt with once more. While marine debris was previously out of sight of general (Western) society by being largely invisible and unobtrusive, the realisation of the scope and impact of the marine debris problem forced the problem into the view of environmentalists, researchers, and the general public.

Following this development initiatives were instigated to educate the general public on the problems that marine debris causes and the detrimental effects that it has on the environment and society. This knowledge results from years of research findings that showed animals dying from the ingestion of or entanglement in plastics, or the build up of organic pollutants, to name a few examples. Consequently, initiatives were started for the clean up of beaches and, more recently, the clean up of the marine debris in the ocean gyres itself. Then, the collected debris can be turned into resource material, for instance to make new consumer products.

The purpose of the analysis of the dimensions of the sociomateriality of marine debris in light of its recycling for new consumer goods is to explore the factors that are involved in the new management of marine debris by Adidas and Parley for the Oceans. Analysis of the three dimensions of sociomateriality sheds light on the position of marine debris and post-recycling goods in relation to each other. Additionally, it serves as a basis on which we can further explore what it means that Adidas and Parley for the Oceans connect marine debris with society.

2.2.1 The disassembly of the sociomateriality of marine debris

The sociomateriality of marine debris may be disassembled into the aforementioned three dimensions. In the technological dimension it is immediately apparent that one of the most important, and at the same time one of the most challenging, technologies involved is the technology necessary for the collection of marine debris. The devices need to collect, preferably all but at least

as much as possible, marine debris. In the meantime they need to be able to withstand environmental forces acting upon it and they must do no harm to the environment. Additionally, they must be durable and manageable.

After the collection of marine debris out of the marine environment it must be transported back to land, as processing at sea requires too expensive and extensive logistical arrangements to be (even remotely) profitable (The Ocean Cleanup, 2016). Some projects, such as the Ocean Cleanup which has now grown out to be a small company, come forth out of the will to deal with the problem that marine debris poses. Part of the challenge is the gathering of technological knowledge on how to develop a technology that can actually tackle the problem.

The EU directive (2008) on waste management provides context for marine debris management by providing rules, regulations, and directions. However, the possibility to make use of and adhere to these are not only dependent on the technologies involved, but also on its materiality. The Adidas x Parley shoe relies on the right material to be collected from the marine environment – namely the material that can be used for the shoe. Other, unfitting material may be disregarded before or after collection simply because it is not seen as a resource. A great part of the debris is plastic and fairly recyclable. This creates the possibility for the rearrangement of the materiality of the debris, which is inherent in the practice of recycling marine debris for new consumer goods. The materiality of the debris becomes important, but not only in its possible usage. The possibility of collecting debris is strongly influenced by the materiality of the debris, especially concerning its size. As debris falls apart or degenerates the debris becomes smaller to the point that it is, at least for now, difficult if not impossible to collect it.

The practices laid out in the EU directive (2008) are prioritised as articulated in the hierarchy, with the prioritisation being based on the desirability of certain practices over others and not necessarily on their feasibility. The way the practices adhere to conditions on impacts and effect on environment, human health, and economy are the cornerstones of this desirability. The social context hereby creates the platform for certain practices based on their social implications, while these implications in turn affect the social context. By bringing marine debris back into society, we must also look at the desirability of practices for the social environment to determine what is the right way forward.

Additionally and perhaps more present in recycling marine debris for new consumer goods is the social dimension in terms of marketing and consumption. The social context that is prominent here is the current dominance of so-called 'green consumption' and variations of this phenomenon. The problem of marine debris is presented as a global issue which affects every inhabitant of this planet.

Recycling marine debris for new consumer goods is presented as a solution to and fix for this global problem on the basis that it improves the health of the marine environment. Values, norms, opportunities, desires, and so on underlie this strive towards a green solution to the marine debris problem. However, the Adidas x Parley shoe is still a consumer item, meaning that the idea relies on consumption to be successful and as such adhere to the foundations of consumption.

When the debris arrives back to land, it could be considered 'regular' land-waste. In that case, the connection with the social element of marketing would be lost. Common or regular waste management does not give the same ring to products marketing-wise as 'made with marine debris' does. Upholding the connection between the shoe and its history as marine debris is then of vital importance.

2.2.2 The reassembly of the sociomateriality of marine debris

The dimensions of the sociomateriality of marine debris are not distinct, but rather an initial indication of the elements involved that provide a decent first impression of what elements are actually involved. It additionally shows that waste management to an increasingly larger extent has an associative character (Hultman and Corvellec, 2012). As Hultman and Corvellec (2012) argue the sociomateriality of waste has a dissociative character in the case of waste disposal, strongly contrasting recycling. The dimensions of this sociomateriality are less extensive, less entangled, and limited. Waste for disposal is removed from society as much as possible as it is unsightly and useless.

The associative character of recycling marine debris, on the other hand, is present in the connection created by marine debris recycling between the three dimensions of sociomateriality. In the collection of marine debris and its recycling connections are established between the materiality of marine debris, marine debris as a technology with all its possibilities, and society. In contrast to the accidental and purposeful sea-fill, from which marine debris originates, the practice of recycling posits marine debris in the middle of society where people can 'interact' with the debris. This interaction takes place when the debris has been made attractive and useful. This change is exemplified by Bartl's (2011) suggestion to rename waste management into resource management as it shows its opportunities.

The sociomateriality of marine debris, then, to follow the definition of Hultman and Corvellec (2012), is the presence of marine debris in society, the ways in which marine debris is defined and dealt with, and the effects this has for society and the environment. In its collection marine debris is brought back into society as a useful material and the consequent recycling for consumer wear brings it even closer to the common man. The material marine debris changes from 'material that is present in the

oceans' into 'material that is collected, processed further, and has a future' under the influence of the technological and social dimensions. The materiality does not in this case become enmeshed, to use Leonardi's phrasing, in a variety of social phenomena. Rather, the phenomena are technological as well as material and exist within a social context. In its turn towards the social context marine debris' distance from the marine environment grows and only the thread created by the label shows the product's history as marine debris. To flesh out these elements, how they affect one another, and the distancing of marine debris from the marine environment, I turn to the theory of disembedding and networking of Briggie and Mitcham (2009) in the next chapter.

Chapter 3 Disembedding and Networking

A project that has gained a lot of attention over the last few years and which has grown out to a business is The Ocean Cleanup. This business aims “to rid the world’s oceans of plastic” (The Ocean Cleanup, 2016) by passively collecting plastic floating in the ocean. The collected marine debris, now and in the future, is to be turned into oil and new and durable plastic products (The Ocean Cleanup, 2016). The project makes use of a technology they named “Boomy McBoomface”, a v-shaped screen deployed on the ocean surface that passively collects debris as it moves towards the screen on the currents. The collected debris is then to be extracted, shipped, recycled, and sold as a semi-finished product.

Another project for gathering debris from the marine environment is The Inner Harbor Water Wheel, or “Mr. Trash Wheel” to locals, located in the harbour of Baltimore (Maryland, USA) (Waterfront Partnership of Baltimore, n.d.). It makes use of water power to collect the debris that flows down the Jones Falls River and, if the river’s current is not enough, a solar panel can provide additional power to lift up the wheel to deposit the debris in a dumpster barge. By the time the dumpster is full, it is towed away by boat and replaced by an empty one. The collected trash is then incinerated to generate electricity.

What these, like so many other, projects do is that they remove the debris from the marine environment and, in this process, it is brought back to society. By bringing it back to society, in a physical sense, it is reintroduced as a material or resource for further processing. On the basis of this physical reintroduction the material or resource is introduced in society in a social sense. In further processing to make, for instance, shoes, the material or resource is appointed a function and purpose in society. This recycling of marine debris for new consumer goods is a practice that does not stand alone. It is, rather, intimately linked with the practice of addressing the problem of marine debris and waste management in general, and also with the values and ideals of the society in which it occurs.

The development in the role of marine debris also brings about a change, or development, in the conceptual understanding of marine debris, as well as a change in the way of handling and managing the debris. As the concept of sociomateriality as understood by Hultman and Corvellec (2012) supports, this changed understanding and management infers developments in the effects of the new way of handling waste as well. These developments are not limited to just the concepts of waste

and debris, but they seep into our understandings and perceptions of waste management, material management, production, consumption, society, and environment.

Recycling of marine debris is one of the proposed solutions in addressing the larger issue of clean up and prevention of marine debris in the marine environment. As such, it is interesting to explore what the actual added value of this practice is for the desired objective – a clean and healthy marine environment as soon as possible and for generations to come. So how does this practice fit within the management of marine debris and what implications does this practice have for the conceptual understanding of marine debris?

To answer this question I start with addressing the concepts of marine debris and waste, especially in connection to the waste hierarchy as described in the Directive 2008/98/EC of the European Council. By means of the theory of disembedding and networking as described by Briggie and Mitcham (2009) I attempt to elucidate what ensues when the practice of recycling marine debris comes into play and connections arise between the marine environment, old products, new products, society's wishes and demands, trash collectors, and consumption patterns. From describing the network that results from the process of disembedding I move to the implications of this changed position of marine debris².

3.1 THE MARINE DEBRIS CONCEPT

By the time that garbage collectors such as the “Boomy McBoomface” and “Mr. Trashweel” are in operation the secluded, detached entity of marine debris has already formed a connection with ‘the mainland’. It is no longer the castaway entity that existed outside society, but is present in society's minds and hands. The associations that have formed are the result of created awareness, such as Charles Moore stumbling upon the Pacific garbage patch on his way home to California after a sailing race in Hawaii, and the associations create awareness in turn. In this associated state, the meaning of ‘marine debris’ is not the same as it was in its dissociated state.

The difficulty with this change is that the meaning of the concept itself was already contested and subject to interpretations, prioritisations, and perspectives. Forming a connection between marine debris and the mainland, and thereby shifting some of those perspectives, prioritisations, and perspectives, only increases the difficulty to come to a satisfying and conclusive definition. The

² I hereby want to stress that although I take marine debris as the waste spread out in the marine environment as the starting point of my analysis, I by no means intend on saying that this is the original position. It only serves as such in my analysis.

discussion in this section is meant to paint the picture of the meaning of marine debris by establishing the boundaries of the concept. On this basis I will discuss the development of the marine debris entity.

A popular definition of the term 'marine litter' was coined in the United Nations Environmental Program's (UNEP) *Marine Litter: A Global Challenge* for the purposes of that document, though many authors make use of the same or a similar definition. UNEP defines marine litter as "any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment" (UNEP, 2009, p. 13). They elaborate that marine litter "consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; accidentally lost, including material lost at sea in bad weather (fishing gear, cargo); or deliberately left by people on beaches and shores" (*idem*).

The Honolulu Strategy (NOAA & UNEP, 2011) adds that the material may be termed marine litter regardless of its size and may be, among other materials, made of "plastics, metals, glass, concrete and other construction materials, paper and cardboard, polystyrene, rubber, rope, textiles, timber and hazardous materials, such as munitions, asbestos and medical waste" (p. ES-1). While these are mere specifications that narrow the definition of UNEP, the Honolulu Strategy also defines marine litter to be litter that is discarded, disposed of, or abandoned that ends up directly or indirectly in the marine environment.

The Honolulu Strategy additionally notes that they interpret 'marine litter' and 'marine debris' to be the same thing, contrary to much other literature that does not specify whether they are different or the same. Coe and Rogers (1996) note, however, that there is a difference between 'debris' and 'litter' and the importance of using the term debris is to encompass all forms of solid waste material that is, deliberately or not, present in the marine environment. Litter is thereby the part that is the result of deliberate release. The concepts may converge and may so be similar at times, or even synonymous. However, the concepts are dynamic, as we learn from Mary Douglas' *Purity and Danger* and her description of dirt as 'matter out of place'. It is thus the context that makes matter dirt, or litter, or debris, and perhaps more importantly the person doing the interpreting, as 'what counts as trash depends on who's counting' (Strasser, 1999, p. 3).

This unclarity in the constitution of what exactly is debris or litter or dirt or waste creates a difficulty in scientific literature and policy alike. It was one of the main objectives for the Directive 2008/98/EC to clarify and specify the meanings of the terms related to waste and waste management. In the

Directive, 'waste' is described as "any substance or object which the holder discards or intends or is required to discard", with the 'holder' meaning "the waste producer or the natural or legal person who is in possession of the waste". This person is the one who decides, whether or not consciously, that the material becomes waste.

Additionally, the Directive talks about "substance or material", which is a broader description than "solid material" that is in some way lasting or handled by mankind. This description in the Directive is more similar to Douglas' "matter out of place" (1966), which is possibly purposefully vague on the point of solidity of the 'something' that is thrown away. In the context of marine debris, and especially the recycling for consumer goods, only solid material is applicable, regardless of its size.

Still, however, the Directive of 2008, as well as its previous versions, has been criticized for its lack of clarity in the definitions, creating definitions that still heavily rely on interpretation and make implementation and consensus difficult. Beside the difficulty inherent in the concept of waste and the creation of a widely agreed upon definition, the progress that is prevalent in the area of waste management to resource management makes the term 'waste', and the material it stands for, undesirable. In a dissociated situation, whereby waste is the result of a process that has as its first two stages production and consumption, waste is the end of the line. There is nothing that comes after it and waste 'just is'. In this state the term waste is easier to define as the context is more narrow. However, the introduction of circular waste management, or circular resource management, broadens this context to the point where waste has become valuable and a resource, making it increasingly difficult to reach consensus on what is what.

As debris floats around in the marine environment it has reached the end station of the production-consumption-disposal track that materials follow. By the time that the materials and substances have been disposed of the connection is lost with the rest of the track, and the materials and substances can be considered waste. In this situation, the marine debris can be described as the collection of persistent, anthropogenic, manufactured, or processed solid material that has been either intentionally or unintentionally discarded, disposed of, or abandoned either directly or indirectly in the marine environment.

Upon entering the picture by a Mr. Trashweel or Boomy McBoomface a new connection is made to the secluded debris. What happens then is that the context of the marine debris broadens from the narrow, secluded, dissociated position to a position that has a limited connection to society. This connection is limited as it physically brings back the debris to society, but it remains at the end station of the production-consumption-disposal track. Like in Douglas' idea of dirt as 'matter out of

place' the interpretation or understanding of what debris is depends on its place, and where, when and how it is out of place – in other words, on its context.

But this understanding of the marine debris concept as the globalised problem of rubbish in the marine environment serves only to the extent that the debris is scattered in the marine environment. When it is taken out of that context this understanding no longer suffices. It is only when the sociomateriality of marine debris changes to an associative connection that the perception of marine debris by society is changed from useless leftovers to something that is present in society and fulfills a role. Establishing this connection and its implications can be described by the theory of disembedding and networking as formulated by Briggie and Mitcham (2009). They argue in *Embedding and networking: Conceptualising experience in a technosociety* in favour of understanding modern society as a networked society in order to understand the relationship between technology and society.

3.2 THE THEORY OF DISEMBEDDING AND NETWORKING

Briggie and Mitcham (2009) provide a discussion on the character or conceptualisation of technological societies in light of the critical assessment of modernity. They discuss their view on the relation between the technological and social dimension of technological societies in terms of disembedding and networking of structures. They thereby go back to the contrast between holism and individualism, and follow the modern tradition of looking at 'the things themselves' in an attempt to explain what happens when a society that is closed off is 'thrown open to a wider world' (Briggie and Mitcham, 2009, p. 374). In a closed off, embedded society part-whole relationships are strong, whereby the part is subordinate to the whole. An embedded community, for instance, is closed off, a whole that is isolated from the outside world like a village in the middle of a forest without any road or line of communication connecting them to the world outside the forest. The parts of the community are hereby secondary and subordinate to the whole.

In the process of disembedding, this part-whole relationship dissolves and the parts become autonomised. The parts stand out and they arise from the process as having their own identity, instead of being submerged within the whole structure or community. The closed off structure opens up towards its environment and connects to the outside world. Where the parts used to have been integrated into the whole, it is in the disintegration that the parts stand out, whereby the existence of the whole is revealed by the fact that it is no longer there. It is thus in the process of disembedding that the whole becomes visible, while it was previously taken for granted.

Within this disembedding process, a network arises consequentially as a compensatory construction. As the whole opens up and the parts are laid bare, they become increasingly individual and autonomised. In this process, they become individual nodes that can be connected via links to form a network, or system of relationships of nodes and links. Dependent on the level of abstraction, these nodes can be communities or places, but also individuals or artefacts.

In the case of the closed off village in the forest that has opened up towards its environment, for instance through the building of a road, the disembedding process constitutes a closer connection to and interaction with the outside world. In the example of Briggie and Mitcham (2009) a central well is replaced by water infrastructure that provides the villagers with running water at home. This process opens up an important communal dimension of the village whereby the houses become nodes in a network linked together by pipes.

Briggie and Mitcham (2009) discuss societies, communities, or social spaces as socio-cultural part-whole relationships, but extend the possibilities of disembedded and networked wholes that can be analysed through this collaboration to five categories. These five categories are not exhaustive and they overlap, but they provide an indication of the possible extensions of the discussed process.

The first category is economic and social institutions. Modern society is characterised by the individualisation of values and worldviews as the economy and social institutes such as science, religion, state, and art become increasingly fragmented. This transition requires citizens to be more self-reflexive, adaptable, and aware, because previously natural relations must now be 'actively figured out and constructed' (p. 376).

The second category is science, education, and knowledge. The disembedding of these social institutes is the development of increasingly autonomous disciplines, as knowledge specialisations increasingly take precedence over the whole and science is separated from its societal context. Although this also shows that the interpretation of the process of disembedding and networking is not clearcut and depends on the level of analysis. Briggie and Mitcham claim that 'Science is disembedded from its societal context and conceptualised as value-free or objective' (p. 376). However, politics, societal interests, and economy appear to be great influences on the existence and development of a scientific discourse, making it near impossible to speak of total autonomy. On the other hand, and a less abstract level, scientists and researchers do their utmost to eliminate values and subjectivities to the fullest possible extent from the structure of their research.

Another type of disembedding process regards technology and production. Embedded artefacts are dependent on their contexts and in turn reflect their context, as for their production they rely on

what is available in their environment. Disembedded artefacts, on the other hand, are more autonomous in their design, production, and use as they are not as much limited to the possibilities that their environments offer. The positive consequence of this is that it drives progress as opportunities become broader and greater as the existing whole no longer exists to limit possibilities. The downside that is often recognised in philosophy of technology is that technology follows a more autonomous path of development, rather than paths set out by, for instance, morality or culture.

The fourth type of disembedding process regards place, trade, and, typography, and Briggie and Mitcham here emphasise the waning importance of place- and time-spans. They borrow Anthony Giddens' interpretation of disembedding to explain disembedding as the 'lifting out' of the restriction of place and time. Relations are no longer out of necessity with others that are present nearby and the standardization of time. The decreasing importance of time and space is also visible in the development of typography, making it possible to transfer knowledge from one person to another regardless of their location and the moment they are alive.

The fifth category of disembedding processes follows from the other four and concerns the increasingly tangential relationship between an individual and her surroundings. This experiential disembedding entails an increased distance between personal experience and a used artefact, exemplified by Briggie and Mitcham (2009) as, for instance, "We click the *Print* icon on the computer screen but do not fell the tree, process the paper, or manufacture the printer" (p. 378)³. Our personal experience is limited to what we want, a printed copy of a text, and knowing how to get it, press the *Print* icon. Everything before it and in between has disappeared from view and from our personal experience. Even though the most banal of technologies create an experience upon use, the experience is shallow and disconnected from the entire process that is actually involved. The growing complexity and scope of technology in modern societies deepens this experiential disembedding.

In such processes of disembedding the parts are not uprooted from the whole and left to wither and die. In the process of networking, which follows disembedding, the parts that are structured during this latter process become nodes in a network through their relations (Briggie and Mitcham, 2009). These relations are the links between the nodes. In the resulting network, which is "a system of relationships composed of individual *nodes*, and *links* between the nodes" (*idem*, p. 378, emphasis

³ This notion of experiential disembedding is reminiscent of notions such as the device paradigm theorised by Borgmann, as Briggie and Mitcham (2009) acknowledge themselves. As I focus in this thesis on Briggie and Mitcham's theory of disembedding and networking, of which the notion of experiential disembedding is a part, because it serves more usefully to understand the mechanism underlying recycling marine debris, I continue with their interpretation of Borgmann in the form of experiential disembedding.

in original) the identities of the formed nodes are associated with their increased autonomy and their reduced involvement in the constitution of a whole.

The definition of the resulting network is dependent on the scale of analysis. Briggie and Mitcham (2009) clarify this with an example of a university. A university can be seen as a network in itself, its nodes and links being people, ideas, and things. But it is also a node within a larger network of, for instance, institutes for higher education or research. Furthermore, a characteristic of such a network is that it remains operable even though it might lose linkages or nodes. The degree in which linkages and nodes are disposable depends on their quantity and quality, because most of them are commonly not crucial. Nodes thereby take priority over the linkages that connect them. The fact that the nodes are connected is more important than the way that they are connected. A plurality of ways to link up the nodes makes a specific link easily disposable as a new link may arise easily, making the network adaptable and dynamic.

To show the necessity of networking as a compensatory construction after disembedding, Briggie and Mitcham (2009) turn to Andrew Feenberg. He notes that decontextualisation, or disembedding, is complemented with reductionism. Things become so simplified and stripped of useless qualities in their autonomisation that they can be enrolled in a technical network. According to Briggie and Mitcham (2009) this interpretation by Feenberg “points out how disembedding makes networking possible – even necessary”⁴. In the disembedding, former parts of the whole are singled out and now ‘stand on their own two feet’, as they are distanced from the other parts of the whole. This opens up room for new connections, especially in their reduced state. What makes it *necessary* to form these connections and thereby a network is that such parts in their reduced state will not survive.

This can be clarified with an example based on the secluded village in the forest by Briggie and Mitcham (2009). The butcher there, for instance, may be described as not only a butcher’s shop where the villagers go to buy their meat, but also where they go for the latest news and gossip. It is a central element of the village as no one else knows as much as the butcher and, most importantly, no one else sells meat products. The butcher himself is reliant on the one farmer in the village, and so on. In the process of disembedding the village and opening it up to its environment the butcher becomes less reliant on his sources and customers, but his functions are also reduced. He is no longer necessarily the butcher to go to for gossip or meat as people now have other options, and he becomes dependent on other connections made.

⁴ Briggie and Mitcham present this point (that networking is a *necessary* consequence of disembedding) to be self-evident, but I find an attempt to explain this conclusion to be relevant.

The example of the butcher shows that after disembedding and networking, both the parts and the whole are no longer the same as they were in the embedded situation. How the situation of marine debris changes under the events of collecting and recycling is discussed in the following sections. The discussed theory of Briggie and Mitcham thereby serves as a useful tool, even though the discussion of the recycling of marine debris is somewhat of a stretch from the combination of technological development and social community that Briggie and Mitcham use as basis. One must hereby keep in mind that the theory of disembedding and networking is rather tentatively explained and incomplete (2009) and therefore not necessarily limited to the relation of technology and community as they describe. It is a useful theory for the case of the recycling of marine debris for new consumer goods, because it enables us to picture what is actually happening when marine debris is returned to society as something useful.

3.3 THE DISEMBEDDING AND NETWORKING OF MARINE DEBRIS

The sociomateriality of marine debris is the framing of marine debris by society. Before the start of projects and initiatives to clean up the debris in the marine environment this framing could be called 'seafill', a system of waste management whereby waste is either disposed of into the marine environment, or ends up there. Marine debris as a generic concept encompasses the whole of the waste that is present in the marine environment as an embedded collection, without distinguishing between specific materials, sizes, or shapes. The collection is closed off from the outside world in a spatial or physical sense as well as a social sense in its existence outside of society's borders. It is physically collected in gyres located far out in the ocean and it is separated from society because it is the ignored end-product that results from social life.

In this embedded situation the parts are subordinate to the whole. On its own, without the larger context, a plastic bottle is merely a piece of rubbish being present in a place where it does not belong. A bunch of plastic bottles and other items scattered all over the marine environment, however, form a collection that is out of place⁵ and it is in this collectivity that the concept of marine debris arises. In this collection, every item is dependent on the existence of the whole. The bottles, bags, and other things present in the marine environment only become marine debris *by virtue of* the marine debris collection and vice versa.

⁵ It is important here to place a reminder that this thesis is written on the assumption and the perspective that marine debris exists and forms a problem. It should be read with this assumption in mind. Societies that view the world as their own back yard without regard for consequences of littering, for instance, will have a different perspective and are therefore excluded from the current discussion.

Since this entire collection in its totality is on its own not handled per se, the debris has no future outside this situation. Elements only add to the collection and even though the elements may, in time, disappear from view through sinking or disintegration, it remains part of the collection. It will remain there, unless the encompassing totality of the marine debris collection is opened up by and to its surroundings.

The process of discarded materials becoming marine debris as it spills into the marine environment is a seepage of society into nature. Society and nature are thereby connected in a way that is detrimental to nature, as exemplified in the studies, stories, and pictures of the toxification of the marine flora and fauna. The debris itself, once in the marine environment, is not linked up with society and it invites dissociation or disengagement from the problem as the problem easily disappears from and remains out of view.

The detrimental effects of this collection usher us to open it up by, figuratively speaking, creating a pathway to the debris in order to remove it from the marine environment and manage it properly. Thereby, like the EU policy on waste management does, we are to move from infrastructure that allows for such leakages of society into nature to infrastructure that keeps the two separate and to keep nature secure from negative societal overflow (Hultman and Corvellec, 2012). Hultman and Corvellec call this the 'principle of decoupling' (2012). In the embedded situation, nature and society are interlinked through the leakage of society into nature, an example of which is marine debris. By bringing society's leakage back to society, the recycling of marine debris for new consumer goods seems to adhere to the EU's policy and to decouple society from nature.

3.3.1 The process of disembedding marine debris

The dissociative relation with marine debris changed when the perception of marine debris by society changed from useless leftovers to something that is present in society and fulfills a role. This development in the role of marine debris, from waste to resource, also brings about a change, or development, in definition of the concept, as well as a way of handling and managing the debris. As the concept of sociomateriality as understood by Hultman and Corvellec (2012) supports, this changed understanding infers developments in the effects of the new way of handling waste as well, for both society and the environment.

This means for the case of marine debris that the practices of recycling marine debris for new consumer goods, and the preceding process of collecting the debris, that it breaks open the collection of discarded items that has made its way into the marine environment. The marine debris is lifted out of its secluded position and the marine debris entity as such disappears. It is similar to

the embedded community that is suddenly connected to the outside world through the building of a road that brings them beyond the boundaries of their secluded environment.

The whole that is the collection of marine debris dissolves as the part-whole relationships within the whole are disbanded. With the autonomization of the parts that comes with the dissolution of part-whole relationships the identity of the parts becomes clearer and more important. It is suddenly visible and important that a bottle is made out of glass or plastic, or that a part has not yet become microplastic. In the process of collecting marine debris size and material matters. The same holds for the process of recycling marine debris. A 'Mr. Trash Wheel' or 'Boomy McBoomface' cannot scoop up microplastics or glass from the harbour- or oceanfloor. Similarly, some materials and sizes are easier to recycle, or the resulting material is cheaper to process further.

Marine debris as embedded entity is lifted out of its embeddedness through its recollection and following reintroduction into society, for instance as raw material to be recycled and used for consumer goods. Like the village that is connected to the outside world through the new road in Briggles and Mitcham's example is disembedded in a physical as well as a symbolic sense, marine debris' disembedding is also both physical as well as symbolic.

It is not only the plastic bottles that make up 'the material being' of marine debris that are disembedded through recollection and thus through the physical act of removing them from the marine environment and the marine debris whole. It is also the idea of marine debris that is disembedded. It is this marine debris-ness of marine debris that is kept alive through the marketing strategies of recycled marine debris products. It is this idea that is pervasive and survives in the Adidas x Parley shoe, which is what makes the shoe interesting and desirable.

Recollection projects such as manual beach cleaning and the ocean gyres cleaning apparatus of The Ocean Cleanup open up the road from marine debris' context to the debris itself. This way, the nature of the collection changes and the 'material that is present in the oceans' turns into 'material that is collected, processed further, and has a future'. In this change and the autonomization of the parts that comes along with it, the parts become increasingly independent and identifiable on their own, but they remain connected. In the process of disembedding and the concurrent autonomization nodes are created which become connected by linkages to form a network.

3.3.2 The marine debris network

In the process of disembedding the existing structure of the embedded community, whole, or collection is lost as the parts are dissociated from their context. Instead of becoming 'free' or 'loose'

entities, however, the parts are restructured or grounded in a network. The parts thereby become nodes by virtue of their relations to other parts. Similar to the community from the example of Briggie and Mitcham (2009) that can now, in its disembedded situation, trade with others outside of its own small community, the parts that together form the whole of marine debris now form relations outside of their collective.

The network that forms in the process of disembedding of the marine debris collection can be exemplified if we look more closely at the process that the fishnet goes through up until the moment you wear it as a shoe. Initially the fishnet is made from processed crude oil made into plastic and woven in a pattern so it may serve as a fishnet. From the producer it moves to a company that sells fishnets, where it is bought by a fisherman. After years of use this fisherman discards it, or it accidentally falls off the boat, and it ends up in the ocean. It has by then become part of the embedded marine debris collection.

It moves around in the ocean for a few years until a ship of Parley of the Oceans comes by, picks it up, and removes it from the marine debris collection. The ship brings it to the mainland, where it is processed and used by Adidas as beautifying stitching on the vamp of a sneaker. Instead of selling it at one their stores, Adidas and Parley of the Oceans create a competition to decide who will be chosen to wear these shoes because it is the first batch. However, there are many more fishnets in the oceans to be collected and recycled to become stitching on other shoes, and one of those pairs may be yours if you go to a store to buy it.

Depending on the scale of analysis, the fishnet may be viewed as a node in the network of marine debris management, which in turn can be viewed as a node in the greater network of waste management. On an even higher scale of analysis this is a node in the network of resource management among nodes such as management of virgin materials and management of materials that are fit for re-use or recycling.

Although the term waste management is increasingly substituted by resource management, because material fit for re-use and recycling are increasingly taken into account (Bartl, 2011), it is important to hold on to the notion of waste management, at least in the case of marine debris. Inherent in the notion of marine debris itself is the classification as waste and undermining this classification reduces the urgency and extent of the problem it poses. Additionally, by classifying marine debris, as it exists in the marine environment, as a resource, the marine environment becomes a storehouse, which further undermines acknowledgement of the problem.

What is left, then, of the marine debris after disembedding and networking is that both the *idea* of marine debris remains, as well as the *matter* of marine debris. This latter form of marine debris remains present as the debris is slowly collected from the marine environment and new matter still ends up in this environment. The idea remains present as there is still debris in the marine environment that is accumulated in patches or on beaches and which is not handled by projects such as Parley of the Oceans which, together with keeping the memory alive in products like the Adidas x Parley shoe ensures that the notion lives on. Additionally, the idea is increasingly present as awareness of the existence of marine debris in society increases.

3.4 CONCLUSION

From the moment of disembedding, new relations arise that connect the fishnet to Parley for the Oceans, Adidas, and consumers, and its strong connection to other debris in the marine environment is weakened. The fishnet and all its characteristics has become important on its own and has become a node in the greater network of marine debris management. The possibilities that the fishnet offers have become important and, along with its weakened relation with the embedded marine debris collection, the detrimental consequences of mismanagement move to the background. Inherent in recycling is the focus on future usefulness, but while the fishnet loses its framing as debris and its identity as fishnet returns, its connection to future uselessness remains intact.

The result is that marine debris is linked up with society again, in stead of being secluded and disconnected. Marine debris as a collection is thereby not closed off anymore, but has become part of a large network in which it is one node among other nodes, such as consumers and producers. The practice of recollecting, recycling, and making the debris available for consumption thereby show the process of disembedding and networking. In the process of creating the Adidas x Parley shoe the fishnet, which used to be part of the embedded marine debris collection, now has an identity. Instead of being closely connected to the rest of the marine debris, this relation is weakened, and the fishnet is important on its own and with its future possibilities. In this process the fact that it is marine debris specifically is not necessarily important, but in the created identity this specific history of embeddedness is highly relevant. What is special about the shoe is precisely its history, which is at least what Adidas and Parley of the Oceans want us to believe.

When we recall the description of the marine debris concept from earlier in this chapter, we see that marine debris could be described as the collection of persistent, anthropogenic, manufactured, or processed solid material that has been either intentionally or unintentionally discarded, disposed of, or abandoned either directly or indirectly in the marine environment. However, this description does

no longer add up due to its new interpretation as something that is value-laden, namely as something useful and a resource. The marine debris became debris either through disposal on the basis of uselessness or as having become useless through disposal. The interpretation changed when marine debris came to be understood as something that does not just exist, but something with a value fundamentally attached to it. In the collection and recycling of marine debris and the co-occurring awareness creation marine debris becomes inextricably linked to its detrimental effect to nature and usefulness to society. As the previous description of the concept only refers to the marine debris as in its embedded state, this understanding does not suffice for a term that can now also be used as a resource or networked entity.

The technological possibilities that recycling offers are thus intertwined with the social dimension of marine debris. The associative sociomateriality present in the Adidas x Parley shoe through marine debris' decoupling from nature reflects a shift towards more environmentally sustainable and desirable practices in product manufacturing. This appears to be grounded in a social environment that pays more attention to environmental values. Recycling marine debris for new consumer goods provides the debris with a future that is in line with the current focus on industrial ecology, sustainability, and environmental values.

This associative sociomateriality encourages the engagement of consumers with the social and environmental conditions of the processes of production and consumption. The social environment calls out for practices that have their basis in environment-friendliness, green ideological ideas, and procedures that take their ecological footprint into account. By giving marine debris a second life in the form of new consumer goods, or a future different from incineration, it is reintroduced in society.

The way it is handled in terms of clean up, collection, and the subsequent processes of making it into new consumer goods arises from this social dimension. While the intention to do something about marine debris has its roots (partly) in the increased awareness of detrimental effects of human conduct on the planet, it may also affect human conduct as originator and the placement of marine debris as end-product. The social and material dimensions hereby shape the handling of marine debris and its renewed place in society. This reintroduction of marine debris into society as a commodity or consumer good appears to challenge these social and material dimensions of marine debris. The next chapter dives deeper into this relation between marine debris and its representation as consumer good.

Chapter 4 Conditions for Consumption

Parley for the Ocean is “a space where creators, thinkers, and leaders come together to raise awareness for the beauty and fragility of our oceans and collaborate on projects that can end their destruction” (Parley for the Oceans, n.d.). One of their featured collaboration programs is the ‘Ocean Plastic program’. They describe their strategy within this program to be three-fold: to avoid plastic wherever possible, to intercept plastic waste, and to redesign the plastic economy (*idem*). Their mission is to use awareness campaigns, clean-up operations, and recycling initiatives to reach their goals: save the ocean from dying by cleaning up the mess mankind made of it and by preventing the situation from getting any worse as much as possible.

One of the projects of Parley for the Oceans is the result of a collaboration with sports brand Adidas and is a shoe made partly out of gill nets and plastic waste that was dredged on Parley’s missions (Dezeen, 2016). According to the designer of the shoe, Alexander Taylor, a designer can seek out “collaborators to reach amazing solutions which outperform and offer truly viable alternatives to current methods” (*idem*). This ‘viable alternative’ refers to the fact that the manufacture of the shoe does not require as much virgin plastic as others, but is instead made (partly) out of recycled plastic. By using this recycled plastic Adidas and Parley for the Ocean aim to increase awareness of the problem of plastic-filled marine environment. It remains unclear what consumers of the future shoes by Adidas x Parley – they intend to scale up the current project – should do with their shoes when the model goes out of fashion.

For the purpose of this chapter I disregard for the moment the extent to which these shoes are made out of marine debris. The trainer released by Adidas x Parley is made with an upper out of gill nets and plastic waste. Adidas on its own released a prototype of a trainer with an upper from recycled debris and a 3D printed midsole made out of marine debris. This is only an example of the recycling of marine debris for new consumer wear. The shoe is not marketed and the limited edition is only available for winners of a competition where they have to show their commitment to stop using single use plastic products. It serves well as the basis for further research that should ultimately lead to new ways of using marine debris for goods for consumption. Other examples, such as oil (The Ocean Cleanup, 201), socks, chairs, carpets, toys and gifts (Pleasant, 2014), and art (Gertz, 2016), show that goods can actually be made using marine debris as the major construction material.

Regardless of the amount of material used, interesting is the fact that the recollected marine debris is reintroduced into society as a similar entity that ended up as marine debris in the first place.

At first sight, this sort of recycling of waste seems unsurprising and nothing special, because the usual practice of recycling is a practice that has been in use for decennia. This specific case of recycling marine debris is, however, different. It is an instantiation of a new connection between two phenomena not directly related. Marine debris is a rather new phenomenon, with the first indications that the problem exists being uncovered in the 1960s. And it is only since a few decades that it has been labeled an environmental threat.

Marine debris is in dire need of management and many ideas, options and possibilities have been put forward to deal with this situation. There are two broad categories to these ways of dealing with the situation: prevention and clean-up. These categories correspond to the more general, pervasive problem of waste, but the matter of marine debris is more new, fresh, striking, and ultimately given a lot of attention. The danger that marine debris poses to nature is more visible, with photographs of animals that are entangled and beaches full of debris present everywhere. Additionally, proposed solutions are increasingly visible, for instance in the case of Parley for the Ocean, but also very much so when a success story envelops around a young engineering student who becomes an entrepreneur with a goal to clean the oceans with his Boomy McBoomface.

The fascinating aspect of what happens to marine debris after it is removed from the marine environment is when it is recycled to become a new consumer good. The debris is reintroduced into a society that thrives on consumption and as a result creates waste that ends up in the marine environment. Remaking new consumption wear out of the debris seems to be a circular management of waste that makes it difficult to believe that organisations such as Parley for the Ocean and companies like Adidas could say that the shoe solves the global problem of marine debris.

This makes it hard to believe that the recycling of marine debris into consumer products like the ones that end up in the ocean holds some truth and value, let alone that it is a solution, even taking into account that the statement is a marketing line. To have success as a solution to the marine debris problem, recycled goods need to be harmless to the environment, or consumers need to change their habits and dispose of them properly. Adidas and Parley of the Oceans, however, do not appear to reach that far in their attempt. Their aim is proper waste management and thereby disregard the consumption and disposal of the resulting product.

The Adidas x Parley shoe thus appears to come no further to a solution and to get rid of marine debris all together. However, the shoe may actually influence consumption habits, for instance, by

creating awareness in consumers who in turn reduce the numbers of shoes they buy. In the creation of the shoe Adidas and Parley for the Oceans establish a strong link between marine debris management and consumption, which they presume yields a positive result – whereby the direct objective is somewhat unclear. The question is whether the recycling of marine debris for new consumer goods really affects consumption and challenges the conditions that underlie it.

In this chapter I will answer this question mainly by means of Wong's (2012) interpretation of the writings of Zygmunt Bauman, a sociologist and prolific writer on, among other topics, consumerism. Although not flawless, Bauman's interpretation of consumer society and its characteristics are a useful tool to delve deeper into the position of waste, marine debris, and recycling in consumer society. On the basis of this discussion I discuss the challenge that the Adidas x Parley shoe poses for these characteristics of consumer society.

4.1 BAUMAN'S NOTION OF CONSUMER SOCIETY

4.1.1 Liquid modernity

“‘We want the finest wines available to humanity; we want them here, and we want them now.’ The hero of the film *Withnail and I* makes these demands in the unpromising surroundings of the stiffly genteel ‘Penrith Tea Shop’.” Tomlinson starts the chapter on the expectation of delivery as the characterisation of our consumer culture in his book *The Culture of Speed* (2007) with this anecdote to exemplify “the juxtaposition of two dramatically divergent orientations to consumption” (p. 124). On the one hand is the tea shop, which is “the epitome of petty-bourgeois complacency, restraint and regulation” (*idem*). On the other is Withnail's demand with “the hot breath of urgent and untamed desire” (*idem*). The second part of this stark contrast is exemplary – though excessive – for the increased importance of the speed in the appropriation of goods in current society.

This ‘we want it here, and we want it now’ is a rather recent development that is exemplary for the transformation of society from a society based on production to a society based on consumption. Bauman signifies this transformation as a development from ‘solid’ modernity to ‘liquid’ modernity, a theory he has written on extensively over the past decades. The time of solid modernity is characterised by an emphasis on a strong work ethic and whereby production of goods is based on the satisfaction of needs. This societal structure changed in the process which Bauman calls ‘liquefaction’.

This move toward liquid modernity engaged society's citizens in their capacity of consumers, thereby organising society on the basis of mobility and inconstancy. It is structured around “new forms of

consumption formed from a shift from the functionality of needs to the diffuse plasticity and volatility of desire, arguing that this principle of instability has become functional to a modernity that seems to conjure up stability out of an entire lack of solidity” (Bauman, 2001, p. 9).

The liquefaction is the transition from consumption as the satisfaction of needs to consumption as the satisfaction of desire. These needs are more stable than the desires that replaced them. Instead of satisfying the need for a roof over your head, for example, the type of house that you live in becomes important and this house can always change and adapt to what you would like it to be. While needs remain largely the same, desires are highly fluctuating. It is this fluidity of desires that forms the fundament and the stabilising factor for the liquid consumer society.

4.1.2 Existential conditions of consumer society

This resulting ‘society of consumers’ does not disregard production, but is rather constructed around consumers and consumption, with the drive behind it having become desire (Bauman, 2001). While consumption in production society is based on survival and the satisfaction of needs, with no further consumption being necessary once those biological and social needs had been satisfied, consumption in consumer society is centred around the satisfaction of demands.

Bauman (2001) makes use of the work of Blaise Pascal (1966 in Bauman, 2001) to signify this move toward demand as a driving force in society: “We seek and find the dénouement to the drama of mortality not in things we gain and the states we attain, but in desiring them and running after them” (p. 10). It is thus not tranquility that we desire, but agitation. Bauman contrasts Pascal with Kierkegaard, who calls this seeking of diversion a pathology of character and something that can be resisted. But Bauman denotes that Pascal ultimately seems to have won. In the society of consumers distraction is socially constructed, with continuously finishing and beginning again the normal way to go about daily life. In consumer society, consumption is this distraction.

In order to establish such a society of consumers, consumers are produced through the regulation or stimulation of desire (Bauman, 2001). Human desires become a source of profit to be exploited in an environment based upon uncertainty, and what used to be long-term and gradual became substituted by something fluid and expandable (Bauman, 2001). But Bauman observes that desire is not enough to sustain such a society and has outlived its usefulness as it can no longer keep up. “A more powerful, and above all more versatile stimulant is needed to keep the acceleration of consumer demand on a level with the rising volume of consumer offer” (Bauman, 2001, p. 14). Desire is replaced by wish, which Bauman understands to be more immediate and freed from constraints imposed by reality.

Current consumer society is thus based on wishing, and the instant gratification and pleasure-seeking nature are its existential conditions (Wong, 2012). While instant gratification and pleasure are devalued qualities in production society (Weber, 2001/1930 in Wong, 2012), consumerism is the protective mechanism against the uncertainty in liquid modernity on the basis of instant gratification (Wong, 2012) and pleasure (Campbell, 1987 in Wong, 2012). Following these existential conditions, immediacy and novelty become prioritised and the core values of consumer society.

4.1.3 The main values of consumer society

The value of immediacy that is prioritised in consumer society describes Wong (2012) as following from Bauman's new meaning of time in liquid modernity. Time in liquid modernity is pointillist and becomes a collection of 'self-contained units' (Wong, 2012, p. 160), or 'eternal instants' (Bauman, 2007, p. 32) that are disconnected and make "an activity only relevant for *now*" (Wong, 2012, p. 160, emphasis in original). Nearly any activity, including consumption, has to be done in and for this present moment as it would otherwise be irrelevant. Gradual and long-term projects lose their sensibility in the uncertain, liquid world and are often substituted by something more short-term and befitting uncertainty (Bauman, 2007).

This does not mean that long-term projects have become impossible in liquid society or that no one is immune to the societal pressure of uncertainty in certain respects. People actively opposing consumerism, for example, are often perceived to behave differently from 'the general public' because they oppose the established way. People training for a marathon are admired for their perseverance, precisely because they manage such a long-term project. Raising children is a long-term project, but is ingrained in our nature and it is generally perceived to be 'going against nature' if one chooses not to have kids. Fighting for societal change to save the planet is precisely a struggle, not only because it entails a development on such an enormous scales, but because it so strongly contrasts the ways of current society.

Additionally, consumer society prioritises novelty as its survival rests upon it. Bauman argues in favour of the idea of novelty as a cornerstone of consumer society on the basis of the continuous incomplete satisfaction of the consumers' wish. Without this incomplete satisfaction and the promise of unexplored experiences the wish to consume wanes, threatening the very existence and continuance of consumer society. Underlying the consumer's wish that needs to be continuously reinvigorated is the economic mechanism at the heart of consumer society. Consumer society is built upon an economic model that prioritises novelty of products over repair: if the consumer does not buy products, the economy does not grow.

4.2 THE SITUATION OF DEBRIS IN CONSUMER SOCIETY

The conditions of instant gratification and pleasure that underly consumer society and prioritise immediacy and novelty is appropriately described by Bauman (2007) as the 'consumerist syndrome' that "has degraded duration and elevated transience" (p. 85). He continues that it has shortened the lifespan of the product by making the consumer see the product more quickly as useless and as something to be discarded, decreasing the time between the moment of appropriation and the moment of disposal as waste.

Additionally, by emphasizing ever new products and immediate availability of the product it is unavoidable that products will be created in excess. Waste is then an inevitable (by-)product of the consumer society. As explained in the first chapter, such discarded products may end up in the marine environment. What is important to take away from this is that consumer culture is detrimental to society, but the question remains whether partly replacing raw material with recycled material puts a halt to this destruction.

The recycling of marine debris to produce new wear for consumption does not immediately challenge the existential conditions of consumer society. It is the instant gratification of the wish to own something else and something more, and the pleasure that comes with the act of consuming that is not directly affected by a different set of materials to make the product. There is no difference between consuming a bright new product or one that is made from recycled material, so long as the wish to have it can be instantly gratified and pleasure from the act of buying and consuming follows, without the consumer being completely satisfied and not left wanting for more.

This follows from the point of the consumer. From the point of the manufacturer, the source of the material is affected and thus the consideration whether one should be a more 'green' company by using recycled materials, or whether one should use virgin or raw materials. It is in this decision that others are as well affected, such as the delver of raw materials, the waste processor, and the one who recycles waste to be used as renewed raw material.

Does this process of recycling the collected debris then challenge the main values of consumer society as they are? While the desire to be satisfied self-propels through the instant gratification and pleasure of the act of consuming, the values of immediacy and novelty present in consumer society are not adhered to in the same way with recycled products. The happiness that arises from the wish to own something a little sooner and a little newer every time increases with the rising intensity of the wish, how instantly the wish is gratified, and how pleasurable the consumption was.

Recycled marine debris products do not challenge the value of immediacy as it can still create the sense of excitement by being directly engaged with a bought product. An Adidas x Parley shoe is in that way no different from a regular shoe made from virgin materials. However, relating it to immediacy in its sense of time – I want it now – is for now made difficult, with products being made in limited editions or only accessible through competition. But because the production of marine debris-products is intended to be upscaled, easier access will in the future become possible and easy access in the future is probable. Products from marine debris will be made commodities and are to be available on the general consumer market, giving you the opportunity to buy it when you are on your shopping spree.

Novelty, then, can be said to be challenged. Inherent in the word recycling is the fact that something was not new and becomes renewed. There is no newness at all in the word debris. It is only in the combination of the two words that some form of novelty is created, whereby the use of the concept 'debris' becomes untenable. While the materials for the process of recycling themselves are, inherently, used, in the process the materials become renewed. Although closer to being new, this is insufficient to uphold the value of novelty in the case of recycling marine debris.

On the other hand, the products that are created are fully new in the sense that they are made from marine debris and thus not from conventional raw materials or other recycled material. They become interesting through their unconventionality and originality. How novel it thus really is largely depends on the way of presenting the product on the consumer market and whether the consumer is to be seduced by its connection to marine debris or not. The products made from marine debris are, so far, not innovative enough to be interesting on their own. The innovation lies in the use of marine debris and this is definitively something new.

4.3 THE SPECIFIC CASE OF RECYCLING MARINE DEBRIS

The recycling of marine debris for new consumption wear is hereby a special case. In the creation of a strong relation between the embedded collection of marine debris before recycling and consumption, and presenting this relation as a solution to solve the problem of marine debris the matter becomes vastly different from other practices of recycling. If the Adidas x Parley shoe would be made from regular recycled fish nets the shoe would not be as special as now when the shoe is made from fish nets that have been collected from the marine environment. The effort in its collection is likely to be different, as well as the quality of the material. What is mainly important is the emphasis on the resulting product having been marine debris and, as such, a part of the problems that come with it. A fish net that has never been in the marine environment has not posed

such a threat to nature as the ones that have. And it would never be presented in the same way as being a part of a solution to the marine debris problem.

On the one hand this connection is used to create awareness for the marine debris issue and it may well be considered a good development that the general public is being made aware of this problem by introducing it into popular culture, instead of keeping it to specific forms of literature. However, it also emphasises that new products for consumption will be made from the debris, which serves (partly) as its raw material. By connecting it to the idea of a solution they create an incentive for consumers to keep on consuming.

How then do the existential conditions and main values of consumer society relate to the Adidas x Parley shoe, as a solution to the problem that marine debris poses? Does the recycling of marine debris adhere to these conditions or challenge them? In the case of the Adidas x Parley shoe the existential conditions are not challenged. Rather, it adheres and sustains these conditions no different than similar, 'regular' products. However, this appears to assume that recycling of marine debris products will be available for the masses, whereby you can just go into a store and buy your Adidas x Parley shoes. The possibility of instant gratification lies in this anticipation, for while the shoes have only limited availability and are only available through competition, one can hardly speak of a high likelihood to instantly gratify the wish for the shoe.

On the other hand, instant gratification is not necessarily dependent on the availability of a product and your purchase of the product because it is available. It is also the experience of it being available without having to go through the process of collecting the marine debris yourself, processing it, and making it into a shoe. It is this principle of reshaping marine debris into a commodity that makes for the process of recycling marine debris hardly posing a challenge to the existential conditions of consumer society. Rather, the Adidas x Parley shoe and similar products made from marine debris fall to a large extent in line with those conditions. In this commodification of marine debris the conditions underlying consumer society are sustained rather than challenged.

Furthermore, the question is whether the recycling of marine debris adheres to or challenges the main values of consumer society as articulated by Wong (2012), namely immediacy and novelty. To a certain extent products made of recycled marine debris do adhere to these values, but what is mainly important is that the products are not new in itself and are rather a renewal of marine debris. The Adidas x Parley shoe, for instance, is nothing new as a shoe. It is not an innovative or revolutionary concept. Rather, the product itself is not conceptually different from any other shoe. It is the matter of which it is made that distinguishes the Adidas x Parley shoe from other shoes and it is

the historical connection to what it was that is present and represented in the shoe that make the shoe to what it is.

It is in this historical connection that the challenge to the main values of consumer society lies. The shoes are special because they are made from marine debris and are only interesting as long as they are made from it. This also means that the material for the shoes has to be marine debris and nothing else. Material thus first has to become marine debris before it can be used as the material for the shoes. It reduces the possibility of immediate appropriation because it limits the amount of shoes that are available. It is also in this historical connection with marine debris that the challenge to novelty lies. Shoes, or, more generally, products, made from marine debris are a new phenomenon and as such adhere to the value of novelty. But marine debris is old matter, processed and disposed of before it became the building material for the shoes. It is in that sense not novel, rather the opposite.

It is important to recognize that marine debris comes forth out of abundant consumption and improper management of its consequences. By adhering, to a large extent, to the conditions and values of consumer society the recycling of marine debris for new consumer wear does not challenge those conditions and values. In the words of Wong (2012), "insofar as technologies are something designed and manufactured for consumption, they too can be seen as an expression of the peculiarities of consumer society. In other words, technologies in consumer society can also be conceptualized as technologies of consumer society in that they reflect and reinforce the values inherent to consumer society (i.e., immediacy and novelty)" (p. 161).

What Wong explains here is also visible in the matter of recycling marine debris. This practice follows the rules as they are laid out by consumer society by following the large frame of reference of liquid modernity and its emphasis on mobility and inconstancy (Bauman, 2000). The marine debris runs through a sequence of temporary states of becoming, from raw material to product to debris and back to material and to product. While it is an important development that the sequence does not stop when the product has turned to debris, it is problematic that the rapidity with which the next states of the process are achieved is tremendous.

Stating that the Adidas x Parley shoes actually form a solution to the problem of marine debris contributes to the reinforcement of the conditions for and values inherent to consumer society. Because the Adidas x Parley shoe hardly challenges the foundations of consumer society, but rather adheres to it to a large extent, consumer society and its foundations are sustained. Instead of addressing the problem that created the marine debris in the first place, the so-called solution of

Adidas and Parley of the Oceans can hardly be called a solution as it, in itself, does not solve the problem of marine debris. What it does, rather, is create a cycle in the process that matter runs through from being raw material to being waste, making the matter run through the stages of being raw material, product, and waste twice.

However, it could be said that the Adidas x Parley shoe and the attention it draws creates awareness of the problem. It brings to the fore that there exists a profound problem with waste in the marine environment in terms of a connection between waste production and the consequences of waste management. But it undermines the effect of consumption in combination with improper waste management. Furthermore, it directs specific attention to the influence of the consumer herself. Although it may be questionable whether this is sufficient ground to speak of a solution, it may just be a first step in the direction of one.

4.4 THE MATTER OF CONSUMER IDENTITY

The recycling of marine debris for new consumer wear broadens the concept of marine debris from material in the marine environment that is scattered and useless, to a resource material, and ultimately to new consumer goods. The notion becomes the core material for the newly produced goods and the core idea as the new products heavily rely on their history as marine debris. This shows in the example of the Adidas x Parley shoes, where the marketing clearly distinguishes the shoe from other 'regular' shoes by the history of the good which is preserved. The shoes are marketed (in the sense of presenting to the market, contrary to bringing to the market) not as shoes in itself, but as shoes *made from marine debris*. This differentiates them from 'regular' shoes, but also changes the way that the consumer is involved with the product.

While the collection of marine debris is disembedded as a whole to form a greater network – leaving the majority of it physically where it was, but with links connected to society through engagement -, the specific inclusion of the history of the material for the shoe shows an inclination to refer back to the embedded state. It is thereby not only the disembedding that increases the visibility of the now disappearing collection, but in the reference to the embedded state awareness for both the embedded as well as the disembedded state is created. The fragmentation of the personal experience with the used technology that occurs in the disembedding is somewhat buffered in this reference to the material's former state. Instead of strong ties being lost in the disembedding, some are recreated in emphasizing that the shoes are made from marine debris.

The experiential networking that follows the disembedding in the case of the recycling of marine debris is less active than Briggie and Mitcham (2009) picture it. In their view, "the networking of

experience could be phrased in terms of acquiring information or educating oneself about x” (p. 379), on the basis of the disembedded experience being “not knowing x”. By active investigation into the technology the workings and materials are uncovered by the user of the technology. By emphasizing the history of the shoe’s material together with the presentation of the shoe itself, this active investigation is no longer completely necessary. The user is passively made aware of where the shoe comes from.

Part of the marketing of the shoe is thus an attempt to close the experiential gap that accompanies the disembedding and networking processes. The experiential gap is the discrepancy between the experience of autonomy and freedom, while the reality is actually interdependence (Briggle & Mitcham, 2009). The shoe is shown to exist not on its own, but is shown to have ties that connect it to its history. Even though this is only a small part of the origin of the shoe and the network that it is a part of, it brings into question where responsibility for the product now lies.

Briggle and Mitcham (2009) put the question of responsibility in terms of the individual versus the collective, signifying the experiential gap. The experience at the node of the individual is the experience of buying a product and discarding it without thinking twice about it. The fact that it later ends up in the marine environment is not necessarily detrimental as the impact and quantity are low from the perspective of the single consumer. It is only in the heightened impact and quantity of discarded material due to a collective discarding and the aggregation of discarded material that problems arise. But this happens at a distance from the individual creating an experiential gap at the level of the individual as his experience is not an accurate depiction of reality.

The individual experience continues to be small scale, when an individual buys shoes made from marine debris and will discard them at the end of their life. Again, this low quantity is not detrimental, but becomes problematic on a collective scale. It is the aggregate of the actions of a multitude of individuals doing the same thing that creates problems. It is in the collective of actions that the responsibility for the problems that arise lies, while the responsibility on the individual level is negligible. Briggle and Mitcham (2009) propose that “The challenge is to adjust individual behavior so that it better comports with reality” (p. 380). They propose two ways of doing so. The first way is to appoint responsibility to the roles that make and enforce rules and regulations. The second way is to increase the individual responsibility by presenting the experiential gap as an ethical imperative to increase awareness and gather information, thereby closing the gap.

Adidas and Parley for the Oceans make a first attempt at closing the experiential gap by ‘attaching’ the information and awareness already to the shoe, therefore not requiring the consumer to do so

himself. It presents to the consumer the picture of him, as well as the shoe, to be a node in a larger network. The consumer is made more aware of the fact that a good for consumption, such as a shoe, not just *is*, but that it has a story to it. Answering to this moral imperative the consumer is aware that he is a node in a larger network as his image of his own role adheres more to reality. His feeling of responsibility thereby follows suit.

But this can also move the other way. The passivity of the way of bringing the moral imperative to the consumer may not be able to adjust individual behaviour or make individuals aware enough. The message may not purport enough of a moral imperative to make consumers aware of the accurate state of reality. Adidas and Parley for the Oceans presuppose that the shoe creates an associative relation between the consumer and marine debris, but it relies heavily on engagement already being present on the side of the consumer.

Furthermore, it is unclear whether Adidas and Parley for the Oceans actually attempt to close the experiential gap. They propose – in the marketing line – that their shoes are a solution to the marine debris problem and that they aim to create awareness in consumers of the problem. But there appears to be no attempt at the creation of an imperative to adjust behaviour on their end. The creation of awareness is not enough if none actually adapt their behaviour on the basis of it. Adidas and Parley for the Oceans rather sustain the existing consumption oriented behaviour by enticing consumers to buy their product as it is the better choice to buy. They leave out of the equation that the option to not buy – at all or as much - could perhaps be even better. Fact remains that the Adidas x Parley shoe responds to the consumer's wish to buy new things.

In either case, the emphasis on the history of the new product, namely that it is made from recycled marine debris carries in it an ideology that Slavoj Žižek terms 'cultural capitalism'. In his work *First as Tragedy then as Farce* (2009a) Žižek explores the cultural dimensions of current capitalism. He argues that it is a form that brings together consumption and morality whereby the consumer and anti-consumer are brought together in a cluster. Moral action and consumption become part of the same action and in this action "you buy your redemption from being only a consumerist" (Žižek, 2009b).

As mentioned before, the enticing aspect of the Adidas x Parley shoes is in the emphasis on the history of the material as once embedded marine debris and the claim that it is a solution to the problem of marine debris. Through this emphasis and claim they implement a moral dimension in the the consumption of their shoes to create the cluster of consumer and anti-consumer as described by Žižek. Similar to Žižek's Starbucks example, in which he describes the feel-good ideology whereby you don't have to think twice about the costs of your consumerism because you consume the right

products, is the moral dimension employed in the Adidas x Parley shoes. The shoes are marketed to be better for the environment and labelled as 'green', thereby appealing to the consumer and the anti-consumer together.

In Žižek's critique of the charitable act he states that consumers of Starbucks coffee actually prolong the disease, rather than curing it (Žižek, 2009b). As a solution he offers a change of the structure: "The proper aim is to try and reconstruct society on such a basis that poverty would be impossible and the altruistic virtues have really prevented the carrying out of this aim". In other words, he argues to prevent the consumer – anti-consumer from forming as the solution does not lie in the act of 'green' consumption. It is in the lack of restructuring of the consumer culture that the basis is lost for claiming that the creation of shoes from marine debris solves the problem of marine debris.

We can learn from Žižek's discussion on the farce of 'green consumption' that although something might be presented as the right buy, the following purchase might not actually be the best option. It puts in perspective the claim of Adidas and Parley for the Oceans that their shoes from recycled marine debris form a solution to the profound problem that marine debris poses. The recycling of marine debris for new consumer wear, such as the Adidas x Parley shoe, opens up the way to address the matter of what to do with marine debris that has been collected. As described in the *Green Paper On a European Strategy on Plastic Waste in the Environment* of the European Commission (2013) "there are not only challenges but also opportunities arising from better management of plastic waste" (p. 3) and Adidas and Parley for the Oceans have gratefully made use of that.

Chapter 5 Concluding Comments

5.1 A QUICK RECAP

Marine debris poses a profound threat to the health of the marine environment. Ideas for remedies and solutions to this problem vary, as well as recognition of the necessity of and responsibility for these solutions. In much of Western society the problem is acknowledged and attempts at solutions for the problem are implemented. One such solution is the recycling of collected marine debris into new shoes, made by Adidas partly from fishing nets that Parley of the Oceans collected from the marine environment. These Adidas x Parley shoes are marketed using the following line: “We at Adidas didn't partner with Parley to take incremental small steps. We partnered with Parley to make big bold steps, to fix big global problems” (Parley of the Oceans, n.d.).

Seeing that marine debris is to a large extent the result of improper management of waste that follows from consumption, an incongruity arises in posing the solution to be one based on consumption. The question then immediately arises whether this is indeed a thorough fix or merely a band-aid solution. This led me to ask the following question: how does recycling of marine debris for new consumer wear provide a solution to the presence and continuance of marine debris by making use of consumerism?

When asking such a question, it is important to have an understanding of the frame in which marine debris is represented. Throughout the previous chapters it has become clear that there is a variety of materials that make their way into the marine environment. Waste can be accidentally or deliberately discarded and end up directly or via water ways on beaches or in seas and oceans. The material may be wood, glass, or plastic, with the latter representing the bulk of the waste and forming the most acute part of the problem. In the persistence, ubiquity, and durability of marine debris lies the core of the problem for the marine environment as it forms a threat to the health of marine flora and fauna, humanity, and the economy. In the persistence, ubiquity, and durability also lies the dominant challenge in addressing the issue. The debris is and will be everywhere throughout the marine environment, and thus finding a comprehensive, immediate and sustainable solution is tough.

In order to understand what happens to the marine debris, I made use of the concept of sociomateriality. This concept was adapted by Hultman and Corvellec (2012) for use in relation to

waste management and they defined the sociomateriality of waste as “the presence of waste in society, the ways in which waste is defined and dealt with, and the effects this has for society and the environment” (p. 2413). This definition in the context of marine debris enables us to interpret marine debris as a social phenomenon as a threefold notion. The materiality of marine debris does not become enmeshed in a variety of social phenomena. Rather, the phenomena are technological as well as material and exist within a social context. On the basis of this I discussed the impact of recycling marine debris for new consumer wear.

With the recycling of marine debris for new consumer wear the marine debris as a whole or collection is opened up. The changing situation can be described using the theory of disembedding and networking as understood by Briggie and Mitcham (2009). This theory discusses the disembedding, as in opening up or uprooting, of an embedded whole, which, as a consequence, becomes fitted as a node into a network. Part-whole relations are thereby disbanded and the whole is dissolved. With the accumulation and recycling of the marine debris the whole that was marine debris as the entity that was embedded in the marine environment and secluded from society, is dissolved. Interesting in this case is that the separate parts that make up the whole become visible and they, as well as the marine debris whole, become part of a larger network upon the reintroduction into society. As a result, the marine debris whole continues to exist in the marine environment, materially, and in the new products, ideally, while at the same time the recycled parts disappear into the new products.

In the fourth chapter the relation between recycling marine debris and consumption was addressed. Using Wong’s (2012) interpretation of the writings of Zygmunt Bauman served as a tool to delve deeper into the position of waste, marine debris, and recycling in consumer society. Stating that the Adidas x Parley shoes actually form a solution to the problem of marine debris contributes to the reinforcement of the conditions for and values inherent to consumer society. Because the Adidas x Parley shoe hardly challenges the foundations of consumer society, but rather adheres to it to a large extent, consumer society and its foundations are sustained. What it does, rather, is create a cycle in the process that matter runs through from being raw material to being waste, making the matter run through the stages of being raw material, product, and waste twice.

5.2 CONCLUSION

Marine debris, or the waste pollution of the marine environment, poses a profound threat to the health of the marine environment. A proposed solution to the problem this threat creates is the recycling of collected marine debris, specifically fish nets, into new shoes by sportswear brand Adidas

and creative thinking organisation Parley for the Oceans. Seeing that marine debris is to a large degree the result of improper management of waste that follows from consumption, an incongruity arises in posing the solution to be one based on consumption. In my analysis of this incongruity I explored the complexity of the situation created by collecting marine debris and giving it a new purpose as consumer wear. To that end I analysed the process of recycling marine debris, the network that arises from this process, and to what extent the solution falls in line with conditions of consumer society and is therefore problematic as a solution.

In response to this question I argue that with the marine debris shoe Adidas and Parley for the Oceans provide a solution in so far that marine debris is removed from the marine environment and awareness of the issue is created through exposure. However, largely adhering to and relying on the conditions of consumer society undermines the solution's own success. Thereby becomes the Adidas x Parley shoe part of the creation of the problem in the first place. The framing of marine debris was affected by the recycling of marine debris as the material returned to society in the form of new products with its history visibly attached to it. As such it did not only physically become part of society again, but also in an economical sense. Furthermore, consumers become aware of the idea of marine debris as it is connected to everyday products through technological possibilities.

Through the Adidas x Parley shoe marine debris and consumer society have become connected in a larger network and in this network the shoe has become present in society in a way that falls rather in line with consumer society. The fact remains that the shoe relies and addresses heavily on the consumer wish of property accumulation. You should therefore think twice before you buy a pair of Adidas x Parley shoes and if you can't resist the urge to let them shape your image make sure you dispose of them properly and not let them go for a swim.

5.3 IMPLICATIONS AND LIMITATIONS

The pollution of the marine environment by marine debris gains more and more attention every day. There are a wide variety of avenues available to pursue in order to address this issue adequately. The reader may take from this thesis an analysis of one possible avenue, which shows some of the upsides and downsides of this proposed solution. The Adidas x Parley shoe manages to capture attention and so manages to draw attention of the larger public to the pollution of the marine environment by debris, that without projects such as this one might not get to know about it.

The Adidas x Parley shoe additionally shows that marine debris may be turned into a useful resource material for new products. Difficulties arise due to the nature of the material, the ease with which it can be collected, and its suitability for certain goals, but the Adidas x Parley shows that it can be

done. However, by claiming the shoe to be a solution to the problem it is likely that it will be considered an example of how marine debris should be treated when it is collected. As I have shown in this thesis the situation is less straightforwardly positive and avenues for improvement should be explored.

I started my analysis in this thesis with embedded marine debris as the original position. But there is knowledge to gain from analysing the situation of marine debris before it becomes embedded. I left it out of my analysis and Adidas and Parley for the Oceans left it out of their product. The history that they connect their product with appears to start at the embedded situation, but the marine debris in this situation has before that undergone the process of becoming embedded. A highly important avenue to be explored in research is what possibilities we have to avoid the creation of marine debris.

Marine debris is a complex phenomenon and collecting and giving it purpose in a complex society requires more than one type of product-turned-debris into another type of useful product. Exploring possible avenues should be directed at what opportunities exist for collecting marine debris, including the debris that has disintegrated and sunk. Other possibilities are to disconnect disembedded marine debris as much as possible from consumption to avoid the pitfall of repeating the cycle and creating new marine debris in turn.

On the whole then the example of the Adidas x Parley shoe shows that even though recycling is propagated, rules and regulations should be more clear on what this recycling should actually entail. There are many options for using marine debris as a resource material and the Adidas x Parley shoe is an example of that, but there is still plenty of room for improvement. With this thesis I do not wish to provide a negative analysis for I do think that Adidas and Parley for the Oceans embarked on a positive journey. For now a solution with an inherent incongruity might just be a first step in the right direction, but for the future we should aim at gratifying the wish to solve this environmental issue by repurposing the marine debris without the option of history repeating itself.

References

- Bartl, A. (2011). Barriers towards achieving a zero waste society. *Waste management*, 31(12), 2369-2370.
- Bauman, Z. (2000). *Liquid Modernity*. Cambridge: Polity Press.
- Bauman, Z. (2001). Consuming life. *Journal of consumer culture*, 1(1), 9-29.
- Bauman, Z. (2007). *Consuming Life*. Cambridge: Polity Press.
- Bauman, Z. (2008). Does ethics have a chance in a world of consumers?. Harvard University Press.
- Barnes, D. K., Galgani, F., Thompson, R. C., & Barlaz, M. (2009). Accumulation and fragmentation of plastic debris in global environments. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, 364(1526), 1985-1998.
- Bergmann, M., Gutow, L., & Klages, M. (2015). *Marine Anthropogenic Litter*. Springer.
- Blackshaw, T. (2008). Bauman on consumerism – Living the market-mediated life. In Jacobsen, M.H., & Poder, P. (Eds.) *The Sociology of Zygmunt Bauman*. Aldershot: Ashgate.
- Briggle, A., & Mitcham, C. (2009). Embedding and networking: conceptualizing experience in a technosociety. *Technology in Society*, 31(4), 374-383.
- Coe, J. M., & Rogers, D. (Eds.). (2012). *Marine debris: sources, impacts, and solutions*. Springer Science & Business Media.
- Dezeen (2015a). *Adidas unveils sports shoes made from recycled ocean waste*. Retrieved on 19-01-2016 from <<<http://www.dezeen.com/2015/07/08/adidas-parley-sports-shoe-alexander-taylor-recycled-ocean-plastic/>>>
- Dezeen (2015b). *Pharrell Williams unveils latest ocean-plastic clothing range for G-Star RAW*. Retrieved on 19-01-2016 from <<<http://www.dezeen.com/2015/08/18/pharrell-williams-g-star-raw-ocean-plastic-clothing-range-aw-2015/>>>
- Dezeen (2016). *Adidas launches trainers made from ocean plastic with Parley of the Oceans*. Retrieved on 18-08-2016 from <<<http://www.dezeen.com/2016/06/08/adidas-trainers-parley-for-the-ocean-plastic-design-recycling/>>>
- Douglas, M. (1966). *Purity and Danger*. London and New York: Routledge & Kegan Paul, Ltd.
- Drackner, M. (2005). What is waste? To whom? - An anthropological perspective on garbage. *Waste Management & Research*, 23(3), 175-181.
- Dryzek, J. S. (2013). *The politics of the earth: Environmental discourses*. Oxford University Press.

- Ekström, K. M. (Ed.). (2014). *Waste Management and Sustainable Consumption: Reflections on Consumer Waste*. Routledge.
- Eriksen, M., Lebreton, L. C., Carson, H. S., Thiel, M., Moore, C. J., Borerro, J. C., ... & Reisser, J. (2014). Plastic pollution in the world's oceans: more than 5 trillion plastic pieces weighing over 250,000 tons afloat at sea. *PLoS one*, *9*(12), e111913.
- European Commission (2008). Directive 2008/98/EC of the European Parliament and the Council on waste and repealing certain documents. Brussels.
- European Commission (2011). *Plastic Waste: Ecological and Human Health Impacts*. Science and Environment Policy.
- European Commission (2013). *Green Paper On a European Strategy on Plastic Waste in the Environment*. Brussels.
- van Ewijk, S., & Stegemann, J. A. (2014). Limitations of the waste hierarchy for achieving absolute reductions in material throughput. *Journal of Cleaner Production*.
- Faraj, S., & Azad, B. (2012). The materiality of technology: An affordance perspective. *Materiality and organizing: Social interaction in a technological world*, 237-258.
- Feenberg, A. (2010). Ten paradoxes of technology. *Techné: Research in Philosophy and Technology*, *14*(1), 3-15.
- van Franeker, J. A., & Law, K. L. (2015). Seabirds, gyres and global trends in plastic pollution. *Environmental Pollution*, *203*, 89-96.
- Galgani, F., Fleet, D., Van Franeker, J., Katsanevakis, S., Maes, T., Mouat, J., ... & Amato, E. (2010). *Marine Strategy Framework Directive: Task Group 10 Report Marine Litter*. Luxembourg: Office for Official Publications of the European Communities.
- GESAMP (2015). Sources, fate and effects of microplastics in the marine environment - a global assessment.
- Gertz, M. (2016). *13 Artists Who Turned Ocean Trash Into Amazing Art*. Retrieved on 21 August 2016 via <http://time.com/4358434/world-oceans-day-art-marine-plastic/>
- Gharfalkar, M., Court, R., Campbell, C., Ali, Z., & Hillier, G. (2015). Analysis of waste hierarchy in the European waste directive 2008/98/EC. *Waste Management*, *39*, 305-313.
- Gregory, M. R. (2009). Environmental implications of plastic debris in marine settings—entanglement, ingestion, smothering, hangers-on, hitch-hiking and alien invasions. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, *364*(1526), 2013-2025.
- Harper P. C., Fowler J. A. (1987). *Plastic pellets in New Zealand storm-killed prions (Pachyptila spp.), 1958–1977*. *Notornis* *34*, 65–70.
- Hawkins, G. (2006). *The Ethics of Waste: How We Relate to Rubbish*. Rowman & Littlefield.

- Hopewell, J., Dvorak, R., & Kosior, E. (2009). Plastics recycling: challenges and opportunities. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1526), 2115-2126.
- Hultman, J., & Corvellec, H. (2012). The European waste hierarchy. From the sociomateriality of waste to a politics of consumption. *Environment and Planning A*, 44(10), 2413-2427. doi: 10.1068/a44668.
- Kirby, D. (2015). *Adidas' New Running Shoes Could Be Garbage, and That's a Good Thing*. Retrieved on 06 June 2016 via <http://www.takepart.com/article/2015/04/20/adidas-shoes-recycle-sea-garbage-marine-debris-ocean>
- Leonardi, P. M. (2012). Materiality, sociomateriality, and socio-technical systems: What do these terms mean? How are they related? Do we need them? In P. M. Leonardi, B. A. Nardi, & J. Kallinikos (Eds.), *Materiality and Organizing: Social Interaction in a Technological World* (pp. 25-48). Oxford: Oxford University Press.
- Mitcham, C. (1994). *Thinking through technology: The path between engineering and philosophy*. University of Chicago Press.
- Moore, S. A. (2012). Garbage matters Concepts in new geographies of waste. *Progress in Human Geography*, 36(6), 780-799.
- NOAA & UNEP. (2011). The Honolulu Strategy. A Global Framework for Prevention and Management of Marine Debris.
- Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies*, 28(9), 1435-1448.
- Palese, E. (2013). Zygmunt Bauman. Individual and society in the liquid modernity. *SpringerPlus*, 2, 191. <<<http://doi.org/10.1186/2193-1801-2-191>>>
- Parley for the Oceans (n.d.). *Adidas x Parley*. Retrieved on 14 August 2016 via <http://www.parley.tv/updates/2015/7/3/adidas-x-parley-collaborating-for-the-oceans>
- Parley for the Oceans (n.d.). *Parley A.I.R Strategy*. Retrieved on 29 June 2016 <http://www.parley.tv/oceanplastic/#parleyair>
- Pleasant, L. (2014). *Trash Into Treasure: 6 Cool Things Made from Sea Plastic*. Retrieved on 21 August 2016 via <http://www.yesmagazine.org/planet/trash-into-treasure-six-cool-things-made-from-sea-plastic>
- Reisser, J., Proietti, M., Shaw, J., & Pattiaratchi, C. (2014). Ingestion of plastics at sea: does debris size really matter?. *Frontiers in Marine Science*, 1, 70.
- Reisser, J. W., Slat, B., Noble, K. D., Plessis, K. D., Epp, M., Proietti, M. C., ... & Pattiaratchi, C. (2015). The vertical distribution of buoyant plastics at sea: an observational study in the North Atlantic Gyre.

- Roy, P. K., Hakkarainen, M., Varma, I. K., & Albertsson, A. C. (2011). Degradable polyethylene: fantasy or reality. *Environmental science & technology*, 45(10), 4217-4227.
- Ryan, P. G., Moore, C. J., van Franeker, J. A., & Moloney, C. L. (2009). Monitoring the abundance of plastic debris in the marine environment. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, 364(1526), 1999-2012.
- Strasser, S. (1999). *Waste and Want: A Social History of Trash*. New York: Henry Holt and Company
- The Ocean Cleanup (2016). *The Largest Cleanup in history*. Retrieved on 29 September 2016 via <http://www.theoceancleanup.com/>
- Thompson, R. C., Moore, C. J., Vom Saal, F. S., & Swan, S. H. (2009). Plastics, the environment and human health: current consensus and future trends. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1526), 2153-2166.
- Tomlinson, J. (2007). *The Culture of Speed: The Coming of Immediacy*. Sage.
- UNEP. (2009). *Marine Litter: A Global Challenge*, Nairobi.
- UNEP. (2015). *Biodegradable Plastics and Marine Litter. Misconceptions, concerns and impacts on marine environments*. United Nations Environment Programme (UNEP), Nairobi.
- UNEP. (2016). *Largest beach clean-up in history lays waste to marine litter*. Retrieved on 12 October 2016 via <http://www.unep.org/stories/Ecosystems/Largest-beach-clean-up-history-lays-waste-marine-litter.asp>
- Waterfront Partnership of Baltimore (n.d.). *Mr. Trash Wheel*. Retrieved on 15 June 2016 via <http://baltimorewaterfront.com/healthy-harbor/water-wheel/>
- Watters, D. L., Yoklavich, M. M., Love, M. S., & Schroeder, D. M. (2010). Assessing marine debris in deep seafloor habitats off California. *Marine Pollution Bulletin*, 60(1), 131-138.
- Wong, P. H. (2012). *Thinking Through Consumption and Technology*. In Brey, P. A. E., Briggie, A. R., & Spence, E. H. (Eds.) *The Good Life in a Technological Age* (pp. 157-167). Routledge.
- Zaman, A. U. (2014). Measuring waste management performance using the 'Zero Waste Index': the case of Adelaide, Australia. *Journal of Cleaner Production*, 66, 407-419.
- Žižek, S. (2009a). *First as Tragedy then as Farce*. London: Verso.
- Žižek, S. (2009b). *Slavoj Žižek. First as Tragedy then as Farce. Full Film*. Retrieved on 29 September 2016 from <https://youtu.be/pfhVUmwS1Xk>