

# **Sustainable Fashion: from Trend to Paradigm?**

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September 2012

## **ACKNOWLEDGMENTS**

This thesis is the result of a long process of learning and writing for which I am grateful to several people: first, my sister Liliana, my greatest supporter and most adamant advisor and motivator who always encouraged me to continue and to overcome the many hurdles along the road. I am also thankful to Grace Schutte, who contributed her expertise as graphic designer in helping me do the layout of the thesis. She was also a great friend who gave me her positive attitude and good energy through this process. Anderson Allen contributed with his revisions of my English writing and his academic expertise was helpful in making sense of my non-sense. I also appreciate Juan Hinestroza's generous remarks, encouragement and interest in my work which gave me the extra push to the finish line, an invaluable contribution that he may not be aware of. And last -but not least- this thesis would not have reached its final form without the expert comments and helpful suggestions of Cindy Kohtala. To all of the above, I am most grateful, but I also wish to acknowledge the friends and family who indirectly have supported this thesis by believing in me and being there to support me through the good times and the bad.

## **ABSTRACT**

### *Sustainable Fashion Design: from Trend to Paradigm?*

The fashion industry is one of today's most unsustainable global businesses. This thesis asks the question of how fashion designers can contribute to change the current paradigm. To answer this question I have studied the most recent research on sustainable fashion design and business. In addition, I have interviewed a broad range of successful sustainable fashion designers in order to get their perspectives on the trends that are occurring, their potential for contributing to radical change, and their views for the future. I first conclude that these small design-driven practices are insufficient for the radical change that the literature says must occur. I also conclude that the basis for a more extensive change to occur starts with fashion design education and consciousness. I add a proposal for a fashion design syllabus as an example of how education could become a pivotal marker for a paradigm shift. In sum, my research shows that society must change radically and collectively, with educators, fashion designers and business leaders working in unison to become part of the solution and not continue to be part of the problem.



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# Preamble

*Today's world requires fashion designers to integrate a holistic approach towards work and life.*

It is in this understanding that I find it important to provide a personal perspective as a background of this thesis and the nature of my inquiry. The core questions and issues addressed in my research come from more than a decade of experience in all stages of the fashion industry and a life journey that has taken me from Bogotá, to New York, Los Angeles and Helsinki.

I began fashion design studies in Bogotá the city where I was born, because I was in love with the creative process, the exciting experience of designing a concept, and the possibility of making it into a real, wearable work of art. As a young student, I felt that I could unleash my creative side and make art out of fashion. My undergrad thesis was a collection I designed based on the artist Gustav Klimt for which I received the highest distinction given at my university. At that time, I had no conscience, nor was it taught to me, of any direct or indirect relation that I could have on the environment as a designer. I was just enthralled with the artistic side of my design possibilities.

Still with much enthusiasm, I applied (and was accepted) to Parson's School of Design in New York, as the ideal place to begin a career in fashion design. But as I studied and worked alongside recognized designers such as Jill Stuart and Helen Wang, I began to see the more complex and less exciting aspects of the fashion industry such as the issue of terrible working conditions and unjust compensations for workers overseas or the wasteful use of materials and overproduction. These problems raised many personal concerns for me.

After I graduated from Parson's, I decided that I could not work under those conditions and therefore I thought I should practice my own ideas of ethical business by the creation my own fashion line. I designed a women's collection, produced at a local factory in New York's garment center with imported linen. Glamour magazine featured several of my designs during the first season.<sup>1</sup> Yet, in order to begin supply the increasing demand it was evident that I would have to fall into the same situation of producing abroad (in China) which implied an enormous

(physical and creative) distance between me, as the designer, and the people who would make the final product, possibly under questionable working conditions.

Therefore, I decided that the next step was to return to the local roots of design, where I could control and work directly with the production process. I created a new fashion business based on sustainable practices involving artisan crafts. I began to work directly with artisans from Guadalajara (Mexico), Bogotá (Colombia) and Fez (Morocco). Throughout the production phase in all of these designs, I made sure artisans benefited directly from my work and could continue to live from their trade. I did this out of my own ethical concerns and design interests and because I wanted to depart from the bad business practices I had experienced while working in New York.

*“this thesis, explores the concerns I have had in view of my personal and professional experience through the design and production process.”*

Though this way of working fulfilled me more, the economic aspects were daunting and the process was unsustainable. Therefore, I had to go back to work on the other side of the designers' world: merchandising and consumer behavior. As I spent a few more years working in the marketing side of the business in Los Angeles, I realized that there had to be a better way of going back to the initial enthusiasm and love I had for the artistic and creative side of a designer, without having to contribute to all of its negative aspects.

This is when I decided that it was time to go back to school and re-learn how to be a designer. I applied to Aalto University's because the master's program allowed for a major in fashion design and a minor in creative sustainability. Graduate studies in fashion that had a concern with the environment; the society and the economy was the type of education that I wanted to obtain in order to have the tools to make positive difference through my creative interests.

This thesis, therefore, explores the concerns I have had in view of my personal and professional experience through the design and production process. The discussion covers the areas I believe fashion designers need to be aware and educated for in the twenty-first century. I have studied the most updated academic research in the field and explored the trends in sustainable fashion in diverse locations, such as Finland, Sweden, the United States, Colombia and Mexico in search of an answer to my thesis question: how can fashion designers contribute to a necessary paradigm change for the fashion industry to become sustainable. Though I conclude that we are far from the necessary radical change, I hope my exploration and overview will inspire further ideas for collaboration between sustainable fashion designers, business leaders and educators so that they may bring back the excitement and creativity to fashion design. I know it certainly has done so for me.



ATTN GIRL!  
LET THE MEN  
BLEND  
INTO THE  
SCENERY  
WHILE YOU WOW  
THE CROWD IN  
BLINDING  
WHITE. JUST  
DON'T SAY  
WE DIDN'T  
WARN  
YOU IF THIS  
SUMMER  
WEEKEND'S  
WORTH OF  
WHITE WASHED  
BASICS  
WINDS UP  
ATTRACTING  
GUYS  
LIKE FLIES.

Photographs by  
Robert Caplan

2000.01

HANDBAG, \$75  
CAROLINA  
OBREGÓN

**What You  
See Is White  
You Get!**

Carolina Obregón design, *Toluca Bag*.  
1. 2000. What You See Is White You Get! *Glamour*. New York: Condé Nast.



# 1

## Introduction

The clothing and textile industry employs about 26.5 million people globally, mainly in Asia, while approximately 60 million workers are currently employed in the fashion industry (Organization, 2012). Clothing and textiles represent about 7% of world exports, with China in the lead (WBCSD, 2008). Consumers around the globe spend at least \$1 trillion dollars yearly on clothes (Allwood et al., 2006). The use of energy and toxic chemicals in textile and clothing production contributes to climate change by burning fossil fuel for electricity used for heating water, air in laundering, and agricultural machinery. In addition to the environmental damage, many concerns involve job quality and their social consequences. Children and women have been reported to suffer from precarious working conditions, unjust salaries, and sexual harassment (Allwood et al., 2006). Thus, production processes have grown to mean harmful practices and unethical conditions for workers that make inexpensive throw away garments for the end consumer as suggested by Niinimäki (2011) as a throw-away society. This situation has been described Rao Raghunathan, and Vonderembse (1997) as the paradigm of a post-industrial environment characterized by global competition, rapid market change, and shorter product life-cycles. Oshry (2012) defined it as cheap manufacturing for a self-centered consumer.

The fashion industry faces an enormous set of problems linked through design, education, business and social practices. This web of challenges could be described as a problématique, implying that a new paradigm can only be achieved by addressing the collective

entanglement of problems.<sup>2</sup> Or as Ken Bausch (1970, p.12) has stated: "It is the nature of our languages, hence our manner of perceiving reality, that we see and call the dissonant elements in a situation".

To approach this daunting situation I have studied the literature on sustainable fashion design and looked at the trends coming from small, positive, conscientious developments because the research suggests that great improvements are being seeded through these small, collective technological and social innovations. Fletcher (2008) proposed that fashion sustainability problems are best addressed at the local level and that a 'something different' paradigm originates from local resourceful techniques and skills developed for incremental change in fashion and textiles. In agreement with this position, I present some of the trends at the local level that the fashion industry may look towards in order for radical changes to occur.

*“The question is then: how do fashion designers become part of the change of paradigm necessary for global to sustainability to occur?”*

These problems and their inter connectedness have generally been addressed linearly and separately, but a sustainable approach seeks to apply a more systematic way of thinking (Fletcher and Grose, 2012). I agree with the researchers who view sustainable fashion as a whole. Niinimäki (2011) adds that in this holistic view, a systemic transformation must happen in both production and consumption in order for there to be an impact on the environment, society, and business practices. Consequently, it is the position of this thesis that the whole fashion cycle --or "fashion system"-- must be understood and addressed as a problématique rather than a mix of separate problems.

The question is then: how do fashion designers become part of the change of paradigm necessary for global sustainability to occur? One answer, proposed by the literature and present in the interviews is that the solution derives from technical solutions and sustainable design practices as a superficial solution. Therefore a systematic change is needed to find long term sustainable solutions. Indeed, for the past decade sustainable fashion has emerged as a trend promoted by conscientious designers who are aware that apparel is a fundamental global necessity that at the same time has a complex impact on the environment. Through innovation and adaptability fashion designers have created practices that are labelled as designer driven: "co-de-

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2 The shared idea in the minds of society, the great big unstated assumptions, constitute that society's paradigm, or deepest set of beliefs about how the world works" MEADOWS, D. H. & WRIGHT, D. 2009. *Thinking in systems : a primer*, London, Earthscan.

3 Zero Waste Pattern Cutting (ZWPC) is fashion design practice that aims to eliminate the production of waste from the production of clothing MCQUILLAN, H. 2012. *ZWPC Workshops*. Available from: <http://hollymcquillan.com/> [Accessed July 2012].

sign”, “zero waste,” mending workshops<sup>3</sup>, “slow design”<sup>4</sup>, and “empathetic design” to name a few<sup>5</sup>.

Nonetheless, what I found generally absent in the literature and in most interviews that I made was a look towards education as a necessary part of the paradigm change. The majorities of designers innovating in sustainable fashion practices are “self-made”: they have learned new technologies and ways of doing eco-business on their own. There are a few courses in sustainable fashion design. Some schools have allowed students to develop collections from recycled materials, and others teach corporate social responsibility (Leerberg et al., 2010), but I found it shocking that there are no fashion design schools that have adopted sustainability as a basis for their undergraduate curriculum and that only two universities offer a master’s program in sustainable fashion design.<sup>6</sup> The schools that offer these programs are more the exception than the rule and can hardly be called a trend. Sadly, the educational system is still one that follows an industrial paradigm that has failed its environmental responsibility. It is here where I conclude more emphasis should be given.

## 1.2 Research Question

My research problem is the unsustainability of the fashion industry, in which fashion designers participate. My purpose was to learn about the environmental consequences of fashion industry and how, as a fashion designer, I could turn my design practices into sustainable ones. I learned that we live under an industrial paradigm that, if maintained, will continue to cause irreversible harm to the environment and is therefore, unsustainable. My hypothesis is that for fashion design to become truly sustainable there needs to be a paradigm shift. The main key question of this thesis then is:

### HOW CAN FASHION DESIGNERS CONTRIBUTE TO CHANGE THE CURRENT PARADIGM?

To answer the question, I studied various theoretical and practical

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4 Slow design aims to prolong a product’s lifetime and deepen product satisfaction  
NIINIMÄKI, K. & HASSI, L. 2011. *Emerging design strategies in sustainable production and consumption of textiles and clothing*. *Journal of Cleaner Production*, 19, 1876-1883.

5 Empathetic design tries to build on a deeper understanding of the individual consumer’s needs and values (ibid.).

6 “Sustainability in Fashion” (Esmod Berlin) and “Fashion and the Environment” (London College of Fashion).

approaches to sustainable fashion design from economic, environmental, and social-ethical perspectives.

### **1.3 Research Method**

The research supporting this thesis was based on a thorough literature review based on sustainable fashion. In addition, I complemented the literature analysis with information based on a variety of experiences from successful fashion designers who are consciously promoting sustainable fashion practices. Though these interviews are only a small, perhaps unrepresentative sample of alternative fashion design practices occurring in the world today, the purpose was to engage in a form of a collective examination into how people understand and sort out their experiences in the world in which they live (Holloway, 1997). I used a simple, efficient, semi-structured interview approach for collecting data by using open-ended questions that allowed others to arise naturally (Marshall and Rossman, 2010).

The interviewees were able to speak in detail and complex issues were talked over and discussed. I then used the interview findings as a way to understand or challenge the existing literature and the contextual review, case studies, and 'trends'. However, I am conscious of the fact that further research needs to be done, perhaps at the doctoral level, for these sample interviews to be conclusive. But for the purpose of this initial inquiry at the master's level I found the information resulting from the practice of these independent designers to be an important comparison and contrast to what I learned from the academic literature.

### **1.4 Outline of Structure**

I open my argument in chapter 2 by defining the concepts of trend, paradigm, sustainable development and design, sustainable fashion design and consumption. Chapter 3 includes a literature review based on books, journals, magazine, newspaper articles, websites and blogs. I also present some of the dire consequences that the fashion industry has on the environment and human health. Chapter 4 identifies the trends in sustainable fashion education and research studies and projects in the area. Chapter 5 shows the data and methods from twelve interviews of independent designers committed to sustainable fashion design practices and social initiatives. Chapter 6 identifies some of the experiences shared by the interviewees and opens room for discussion. Chapter 7 discusses the issue of sustainable fashion and education. Chapter 8 concludes the thesis and leaves questions for further research. I have added appendices that transcribe the interviews made to designers, researchers and educators in sustainable fashion design and included my proposal for a syllabus of a sustainable fashion design course.







# 2

## Concepts and Definitions

*In order to clarify the terms of my argument I provide several working definitions and an overview of the fashion industry's environmental impact.*

### **2.1 Problématique**

The concept of a problématique, defined simply as “a meta-system of problems”, appeared for the first time in the 1970's under a Club of Rome (CoR) manifesto (Bausch, 1970). CoR, under “The Predicament of Mankind” presented a list of 49 diverse issues would equal the global problématique (Flanagan, 2011). Pollution, inner city poverty, starvation, nuclear proliferation, population growth stand were identified as strongly interconnected facets that contributed to the emergence of what the CoR labelled as the problématique (Bausch, 1970).

CoR recognized the futility of addressing problems in a piecemeal fashion, addressing it, instead, as a way of questioning and resolving a system of problems articulated into a philosophical, methodological, and institutional framework (Bausch, 1970). Therefore, the environmental problématique is synonymous with a permanent malaise without a clear vision of how to cure it. Its symptoms spread widely,

reaching the globe in its entirety. Experts have talked of the best and worst-case scenarios; the conclusion is not positive. Many of the environmental challenges described in the 1992 Rio Earth Summit are becoming a reality (UNEP, 2012). In February 2012, delegates from the United Nations Environment Programme (UNEP) gathered in Nairobi for the 12th Special Session concluded the need to take immediate action in order to stop the environmental degradation. Seen as related to climate change, energy wastes, and ozone depleting substances; as well as the sustainable administration of natural resources, include water, biodiversity, and ecosystems (UNEP, 2011).

*“I have taken the concept of problématique as a practical viewpoint of the fashion industry.”*

For the purpose of this thesis, I understand the problématique examined by the Club of Rome (Bausch 1970, p.14) as relevant to the fashion industry’s impact on man, the economy, society, and the environment because of: 1) Generalized environmental deterioration 2) Generalized lack of agreed-on alternatives to present trends 3) Accelerating waste and exhaustion of natural resources 4) Growing environmental pollution 5) Irrational agricultural practices 6) Irresponsible use of pesticides, chemical additives, and fertilizers 7) Growing technological gaps and lags between developed and developing areas 8) Obsolete system of world trade 9) Insufficient understanding of continuous critical problems, of their nature, their interactions and of the future consequences both they and current solutions to them are generating.

Therefore, I have taken the concept of problématique as a practical viewpoint of the fashion industry and how it pertains to complex, continuous “...critical problems which interact and entangle as wicked problems” of global magnitude (Flanagan 2011, p.1).<sup>7</sup> I use this concept to contextualize the magnitude and negative impact of fashion and textiles has upon the globe. As a meta-system of problems, the concept of problématique helps to view the complexity of the fashion industry and its inter connectedness. In order to understand fashion design sustainability, we must assume that all processes and systems are related. A fashion designers’ role is holistic and systemic. This means that it is interdependent between humans and the environment and assuming that all of its components are essential (Development, 2010). The fashion industry’s global impact in scope shows evidence of its complexity, dynamism, and peril state (Bausch, 1970). The

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7 Flanagan also describes the aim of the Club of Rome “to turn the above all pervasive problématique which is built into our situation, through some new leap of inventiveness” FLANAGAN, T. R. 2011. *A Democratic Approach to Sustainable Futures*. Ongoing Emergence Press.

advantages of viewing this thesis from a problématique approach is that it views the fashion design industry in its relationship to the processes, the products life, the users of the system, the global dimension, the value of the new attitudes and innovative results, and the importance of holistic solutions.

## **2.2 Trend**

The word “trend” originally meant to “roll about, turn, and revolve” but has evolved into what the American Heritage Dictionary (2003) defines “a general direction in which something moves; as a current style or vogue”. Closer to the purpose of this thesis, sociologist Vejlgaard (2008, p.8) has identified “trend” as: a process of change that starts by product development and results in new products or as a prediction of something that will happen in a specific way, with its first signals meaning a change may be about to occur.

Trends are also characterized by what Blumer (1969, p.284) refers to as a “collective taste.” In fashion, he identifies it as a collective behavior where: 1) People within the social sphere should be receptive to change 2) Models of new social form must be available for repetitive presentation 3) People should have the freedom to select among competing new models of social form 4) Prestige figures should be available, which in turn would make others follow. King (2007) defines a trend as a process of collective selection within social groups, where influential consumers exist at all social levels, calling it the “trickle across” effect. In today’s world, a trend within fashion is something that passes and disappears from the consumer’s vision and mindset.

Moreover Martin (2010, p.14), defines trend as “...the direction in which something (and that something can be anything) tends to move and which has a consequential impact on the culture, society or business sector through which it moves.”

Nonetheless, sustainable practices as per Manzini (1994, p. 37) have “progressed from the agitated argumentation of a few scientists and environmentally conscious groups to become a theme, which permeates the entire society, influencing the orientation of both generalized trends and everyday decisions.”

Sustainability as a term had surfaced during the 1970's but sustainable fashion as a trend came much later. Sparked by the environmental crisis there was a surge of anti-establishment companies in the late 1980's as Patagonia (1985) and Komodo (1988) that promoted ethical fashion, where it could be called as a beginning of a trend. But it was only until 2008 that sustainable fashion began appearing more consistently in news stories.<sup>8</sup> Helen Job, editor of a leading trend forecasting service WGSN<sup>9</sup> US, held a Rethinking Fashion series on sustainable fashion at Parsons New School for Design in 2007. She indicated she had been tracking the trend since 1999. Her trend forecast analysis included looking at eco-cities, home products, technology, and architecture. Now it became the classification of a trend working its way into a collective awareness of issues such as climate change, food, architecture, and home, with individuals seeking a healthier lifestyle (School, T.N., 2007).

The sustainable fashion trends observed as the most significant are those, which reflect the need for a paradigm change. WGSN reported on a variety of sustainable fashion trends from the consumer, to the production processes, to the material. Some of these trends were classified as: 1) Sustainable design in sportswear: Sustainable practices across the entire life cycle of a product have become more important to the sportswear industry 2) Responsible prosperity in luxury marketing: A new breed of consumer is demanding brands that are both luxurious and sustainable in order to justify their post-recession spend. For luxury marketers, responsible prosperity is becoming a powerful tool. 3) Denim sustainable finishing: Denim producers working hard to reduce their impact on the environment and to improve working conditions for those at the manufacturing front line, as the latest denim finishing developments show (Prahl, 2012).

Additionally the most significant trends within sustainable consumption that embarks in a variety of areas within fashion are defined by WGSN as: 1) Design innovation addressing challenges by the social and environmental impacts of fashion consumption 2) Designers are exploring beyond product resulting in new processes, services and systems. 3) Concepts consider products longevity and versatility,

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8 Data scaled based on an average search. GOOGLE. 2012. Sustainable fashion [Online]. Google. [Accessed March 2012].

9 WGSN (Worth Global Style Network) launched in 1998, is the leading online trend-analysis and research service providing creative and business intelligence for the apparel, style, design and retail industries WGSN. [Online]. Available: <http://www.wgsn.com/>.



Nosh Organics "scandinavian with a retro twist," at The Recycling Factory in Helsinki, Finland. Obregón, C., 2011. Helsinki. *The Recycling Factory: Kids Clothing*. [photograph].

where consumers are involved in doing good through ethical production methods. 4) Creative strategies address products impact in the end of life phase and are significant in promoting sustainable fashion consumption. 5) Education and companies transparency is empowering the consumer to create the change in fashion (Prahl, 2012). It is important to outline the concepts, which WGSN analyzed and reported: design for longevity<sup>10</sup>, design for disassembly<sup>11</sup>, design for ethical production<sup>12</sup>, in use and end of life<sup>13</sup>, and consumer education and transparency<sup>14</sup>.

For this thesis, then, I understand a sustainable fashion trend as reflecting “the cultural construction of the embodied identity” in the sense that it is a gradual adaptation of the society and individuals who are looking to adopt sustainability into their lifestyles but are still not part of the mainstream (Steele, 1997).

*“The shared ideas in the minds of society... deepest set of beliefs about how the world works.”  
Donnella Meadows*

## 2.3 Paradigm

Thomas Kuhn famously defined “paradigm” in *The Structure of Scientific Revolutions* (1970), as “a set of practices that define a scientific discipline at any particular period of time” in the natural sciences. A paradigm has also been defined by Caldwell (2001) as the accepted rules of society that can transform into a new paradigm when those rules shift and become a new set of practices.

Systems thinker Donella Meadows (Winter 1997, p. 84) defines paradigm as “The shared idea in the minds of society, the great big unstated assumptions-unstated because unnecessary to state; everyone already knows them-constitute that society’s paradigm, or deepest set of beliefs about how the world works.” Additionally Meadows states, a paradigm as an example of something from a pattern or model.

All the facts, being in this case: population and cities, energy and consumption and climate change, agriculture and environment, information and electric power, capitalism and economic policies, structures and materials, human life and standards of living contain information relevant for a new paradigm to arise (Lynch and Strauss, 2007).

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10 Product longevity is a key consideration and design strategies incorporate classic styling and colour, versatility, quality and durable design. Physical product durability alone is not enough, as consumers need to want to keep their products for longer through building more emotional relationships with their clothing, footwear and accessories PRAHL, A. 2012. Design for sustainable consumption: trend analysis. WGSN.

11 Design efficiency can be enhanced through the use of a disassembly strategy, with the aim to facilitate remanufacture and recycling at the end of the product’s first life. Manufacture for future disassembly must utilise suitable joining methods such as dissolvable stitching, hook and loop systems and lace-up or tie assembly (ibid.).

12 Ethical production comprises many aspects, including valuing fair wages, working conditions and workers’ rights, supporting and investing in traditional craft skills and livelihoods, and supporting animal welfare and ethical animal husbandry. As designers realise their power for initiating change and doing good, cause-conscious and socially aware products are high on the agenda, whether located close to home or far away (ibid.).



According to Kuhn:

*Development of a paradigm: affects the structure of the group, it attracts future generations leaving older ones to disappear. In part, their disappearance is caused by their members' conversion to the new paradigm. The new paradigm implies a new and more rigid definition of the field (1996, p. 15).*

*In the sciences: the formation of specialized journals, the foundation of specialists' societies, and the claim for a special place in the curriculum have usually been associated with a group's first reception of a single paradigm (1996, p.19).*

*To understand it we shall need to know the special characteristics of the groups that create and use it (1996, p.210).*

The paradigm we are now living is referred as a post-industrial environment (Vonderembse et al., 1997). Paradigms shifts lead to technological changes and new products arise (Ing, 2010). The most important paradigm shift within this context came in the late 1990's as a digital content became networked, i.e. The Internet (Ing 2010, p. 6).

In order to create a sustainable fashion paradigm, we have to confront the issue of how different value systems and world views affect our design solutions (Lee and Regni, 2009). The issue in a sustainable fashion discourse relates to questioning fashion's unsustainability, its passing from being a trend to permanently mirroring contemporary fashion impact on society, the environment, and the economy.

For this thesis, then, I understand paradigm as the patterns and assumptions that a society assume at a given place and time. This in turn reflects in all parts of a social structure as in business, production processes, and social behaviors. Knowing the patterns of a paradigm may give clues to what lies ahead, therefore preparing the path to follow. In fashion, the sustainable trend constitutes the patterns that I think eventually will create a paradigm shift within the whole industry.

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- 13 The use phase, particularly the washing, ironing and dry-cleaning of a garment, is often identified as a significant contributing factor to negative environmental impact. This can be addressed by utilizing creative product and systems strategies to reduce environmental impact during the user phase, as well as offering considered end-of-life options to the consumer and are classified as reduce, reuse and recycle (ibid.).
  - 14 Company transparency and access to information about products and their supply-chain is essential to empower the consumer through knowledge and engagement, in order to contribute to positive transformation in the industry by awareness, clothing care, and production information (ibid.).



Table made from a recycled poster and baby carriage at The Recycling Factory in Helsinki, Finland.  
Obregón, C., 2011. Helsinki. The Recycling Factory: *Bar Table*. [photograph].

## 2.4 Sustainable Development

Sustainability is a term with many recognized definitions. In the publication of *Our Common Future* in 1987 a breakpoint in thinking on environment, development, and governance was initiated. Along with the concepts of growth and development the World Commission on Environment and Development (WCED 1987, p.281), issued a call to change “institutional mechanisms at global, national and local levels to promote economic development that would guarantee the security, well-being, and very survival of the planet.”

The report intended for both ‘developing’ nations and industrial countries, suggested to impose limits on technology and social organizations on the impact of environmental resources (WCED 1987). For example, the report called for all industrial nations to adopt life-styles within the planet’s ecological means - in their use of energy in order for sustainable development to happen.

Sustainable development (WCED 1987, p.17) “...is not a secure state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs.” The group shared the belief of a more prosperous, just and secure planet, while sustain and expanding the ecological basis for development.

A common understanding in the report referred to the alarming and unacceptable trends facing the world and called for immediate action. A change in behavior integrating processes within the environment, society and the economy were considered. Additionally, they agreed to look at development and the environment together, as both were defined as interwoven in the real world. The report referred to sustainable development as a new industrial era, where the energy and raw materials content of the new products must be way below present day levels. The process described as difficult and painstaking; the challenge, both interdependent and integrated. A concluding call for action was proposed to focus on the well-being, and survival of the planet which depend on present day changes (WCED, 1987).

*Limits to Growth* (Meadows and Club of, 1972) addressed the growing trends in world population, industrialization, pollution, food, consumption, and resource depletion, taking it to a global level of awareness. The major issue with unstained growth, if unchanged, was anticipated at reaching its peak in one hundred years, with chaotic and significant consequences. The alternative to exponential growth with finite resources would be to establish a condition of ecological and economic stability that would last into the future (Caldwell, 2001). It saw humans as searching for a model representing a world system: sustained without sudden and uncontrollable collapse and capable of satisfying the basic material requirements of all people, in words by Sheddoff (2009, p. xxxII). “Don’t do things today that make tomorrow worse.”

Charles V. Kidd (1992, p.3) outlines the complexity and broadness of the term, saying “There is not, and should not, be any single definition of sustainability that is more logical or productive than other definitions.”

Sustainability is an approach for design and development processes focused on environmental, social, and financial factors often not addressed. In that vein, this thesis focuses on the definition given by the Brundtland report, *Our Common Future* (WCED 1987, p. 41), “Sustainability should meet the needs of the present without compromising the ability of future generations to meet their own necessities.” Sustainable solutions strive to improve the many systems that support human population, including efficiently using capital and markets, effectively managing natural resources, and reducing waste and toxins in the environment, while not harming people across the Earth.

## **2.5 Sustainable Design**

Presently design must incorporate sustainable principles in order to work with in the natural world and not deplete even more the resources that we have left. As said by authors McDonough and Braungart in their manifesto (2002) “...when designers employ the intelligence of natural systems—the effectiveness of nutrient cycling, the abundance of the sun’s energy—they can create products, industrial systems, buildings, even regional plans that allow nature and commerce to fruitfully co-exist.”

Sustainable design is often given other denominations, such as: “green,” “environmentally friendly,” “eco-conscious,” “innovatively green,” to name a few, where the meaning depends upon the context, situation, and social setting, as well as cultural, environmental, and financial impacts.

On first instance, sustainable design aims at creating value by meeting the triple bottom line: economical, environmental and social-ethical benefits (Charter and Tischner, 2001). Sustainability (WCED 1987, p.41) defined as “...development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” When added to design, Manzini and Vezzoli (2008) agree that environmental requirements should be considered from the first stage of the design process, as well as cost, performance, legal, cultural and aesthetic requirements. The designer should work with preventive terms rather than end of pipe solutions (ibid.). Niinimäki and Hassi (2011) point out that the fashion industry has focused on technical and cost related aspects such as low price of a garment and increase efficiency in production, and not on sustainable issues. The concept of a ‘sustainable product’ is misguided because the impact any product has on the social and ecological environment

depends not only on the manufacturing, but also on its use (Stegall, 2006). Before design was based on producing more, each individual part was independent of the other affecting the whole ecosystem. Sustainable design considers a holistic, interdependent and interrelated process. Sustainability focuses on efficient and effective solutions that are better for society, the environment, and business (Shedroff and Lovins, 2009).

Shedroff and Lovins (2009) argue design disciplines focuses on making meaningless, disposable, trend-laden fashion items, their attention diverted often by trends. A successful sustainable design follows careful criteria and considers responding to customers, users, participants, people, market, company, brand, environment, channel, culture, and materials (Shedroff and Lovins, 2009). A sustainable design is created for and about customers as people, not only as consumers. Consequently, the design has a healthy outcome for the whole ecosystem.

It is imperative for designers to understand the bigger picture first before the creative process begins. Therefore, I see sustainable design as a process, which addresses a specific need and problem, combining different forefronts, not only through research but also by focusing on detailed questions. Problems of sustainability are complex and require collaboration from numerous experts in diverse fields working within a trans-disciplinary approach. Designers have a responsibility to be involved in the whole process from creation to product, by adopting life-cycle solutions, which diminishes the environmental impact. Conscious decisions on where, how, when, and who will produce the product adhere to sustainable design principles. A challenge is not to fall into the pattern of creating another “green, eco-friendly” product.

## **2.5 Fashion**

The origins of term fashion can be traced to the 14th century where it was noted by the introduction of innovations in hairstyles, footwear and especially dress styles (Newton, 1980). A distinction between the sexes was established and clothing transformed from being loose draped to form fitted (Newton, 1980). The insertion to these innovations by adoption of fastening secured with buttons evolved to cyclical changes in taste in clothing in Europe (Belfanti, 2010). “The coming of fashion created a new world, in which a passion for novelty combined with rapid changes in taste, interrupted a tradition of well-established habits in ways of dressing and the significance attributed to clothing” (Belfanti, 2010, p. 1).

Several observers differentiate between clothing and fashion, where the first represents the functional, technical, and protective traits, where the second is perceived as symbolic, signifying and communicative (Bourdieu, 1984, Barthes, 1983, Busch, 2008, Kawamura, 2005).

Otto Von Busch (2008) defines fashion design and the fashion industry as always having been a sign of exclusivity; but over the years in the developed world it has become more “democratic,” with luxury as a necessary evil in people’s lives (ibid). Rapid shifts in high number of collections create a racing pulse within the fashion industry, which exerts a greater influence on design disciplines than ever before. “Fashion is the process of becoming, of producing intensities of difference” (Busch 2008, p.34). As cited from Bourdieu (1984, p.133) “fashion is the latest fashion, the latest difference.” This view has been supported in the work of Busch (2008).

*“Sustainable fashion offers a unique opportunity to integrate a holistic approach towards work and life.”*

Fashion design as a discipline is one where clothing and accessories are designed either work as self-employed, or with individual clients, established brands catering to mass markets or higher end collections. A majority of fashion designers work for apparel manufacturers creating women’s, men’s, and/or children’s fashion for a mainstream market. “Fashion often begins among those who are perceived to be trendsetters and these trends later spread to other groups” (Aspers 2005, p.16). A vision-oriented designer has the tools to bring radical solutions to fashion’s negative impacts and fashion, a forward-looking discipline based on creativity, traditional practices, and artistic expression, has found solutions based on this principle in the past. Since the word fashion implies rapid change and (Belfanti 2009, p.261) “... represents a turning point in the history of human societies,” in that it introduced to the social structure a new system of values, able to condition the behavior of the actors, both as regards individual choice, and strategies adopted by economic organizations (Lipovetsky, 1994) is adopted for the thesis.

## **2.6 Sustainable Fashion**

Sustainable fashion can enhance the physical, emotional, and psychological well-being of people (Welters, 2008). It is one of the main arguments of the practice, a unique opportunity to integrate a holistic approach towards work and life. The position is not new: since before, the industrial revolution consumers had to be thrifty, economical, and resourceful for their clothing and everyday needs (Welters, 2008). Clothes back then, kept as a dowry and inherited from generation to generation, created a sense of ownership and love for each piece.

People were sustainable without knowing, from a sense of need and relation to things, people, and the environment (Welters, 2008).

Sustainability is understood as harnessing resources ethically and responsibly without destroying social and ecological balance. Sustainable fashion has translated that understanding into choice and provenance of materials, fairer employment models, efficient processing techniques, empowering community projects, and greener design concepts (UNCTAD, 2008).

According to Fletcher (2008) sustainable fashion means more efficient processes and adding 'something different' involving ethical change within a personal, social and institutional scope, comprising the following steps, which have an impact on the environment, society, and business practices: 1) Choice of fibers from their origins: vegetal, animal, mineral or synthetic 2) Manufacturing of yarns and fabrics 3) Dyeing and finishing fabrics 4) Cutting, sewing and finishing garments 5) Marketing and distribution of finished products 6) Consumer use and final disposal.

Sustainable fashion looks at the whole cycle from the earth, to the final product, to the user and the behavioral pattern the clothes might create. The system's variables are proven sustainable or unsustainable. Experimentation is costly, but its absence can have enormous environmental and financial implications.

When creating sustainable fashion, coming into collaboration is key, due to the involvedness of the practice. Therefore, clarity and transparency may shape and perpetuate ethical fashion. Producing healthier and more applicable solutions has many human and financial advantages. A definition for ethical fashion is by Burak Cakmak, director of the CSR Gucci Group: "Creating desirable products, evoking an emotional connection with the customer and taking into consideration their impact, while being transparent about the process" (Ravasio, 2012).

Sustainable fashion embraces three revolutionary ideas: to green the industrial machine processes; to repair social and business practices; and to create a new way of viewing and living fashion. The implemen-

*“Sustainable fashion means more efficient processes and adding 'something different' involving ethical change.”  
Kate Fletcher*



Carolina Obregón design, handbag made from recycled hand woven carpet.  
Obregón, C., 2003. Fes, Morocco Collection: *Tapete*. [photograph].



tation of new sustainable processes can counter some of the environmental, social, and economic impacts.

## **2.7 Sustainable Consumption**

Manzini (1994) describes how the 1980's new demand for environmental quality in products surfaced as a result from the concern over environmental issues. An "ecological re-orientation" pertaining to production and consumption models during and era of highlight of the industrial paradigm was discussed albeit superficially, since changes in lifestyles or overall development were not addressed (ibid.).

Furthermore, as stated by Fuad-Luke (2009) sustainable consumption in the late 1980's meant to cause less damage to the environment. The author believes in order to improve well-being, quality of life, and reduce the environmental footprint, it must be learned how to consume differently. Moreover, Manzini (2004) suggests, "...In a society saturated with material goods, to focus on the immaterial seems more interesting."

Additionally, coming into the 1990's a more serious talk about consumption models surfaced. As per Manzini (1994, p.38) "re-design of what exists" was not sufficient since the environment, economy and society are interconnected. Manzini (1994, p.40) proposed "consumption scenarios" to improve the social eco-efficiency based upon the "culture of consumption". The scenarios were described as: 1) From Consumption To Care 2) From Consumption of Products to Utilization of Services 3) From Consumption to Non Consumption. Overall Manzini's innovative proposal requested designers to remember the aesthetics, even if less was a new form of design (ibid.).

Niinimäki (2011, p.18) proposes a holistic approach to the impacts of textile and clothing industry, where necessary knowledge is advised not only with "...eco-materials, eco-efficiency in production and ethical manufacturing, but also on the consumers' relationships with products in the context of sustainable development." Furthermore, Niinimäki (2011) advocates for designers within fashion to find new ways towards sustainable consumption where new value creation pathways can create innovative and impactful options towards a more sustainable future.

Niinimäki (2011, p.93) dissertation outlines consumers worries, wishes and interest in clothing design and studies "...consumption, person-product relationships and values within sustainable design." The importance of person-product relationship has been overlooked; Niinimäki looks into understanding the link and bonding that a consumer has with a product. This in turn gives clues into how this relation might help diminish consumption.<sup>15</sup> It highlights how the designer can reach the consumer by supporting s sense of belonging with the garment in order to create less consumption.

Increased production and consumption coming from technical developments has left aside the human aspect. Fashion cycles and trends contribute to consumers' voraciousness of wants and needs for clothing as defined by Fletcher (2008). To make the transition to sustainability focus on the human aspects in sustainable development is an area often overlooked at (Niinimäki, 2011).

*“enabling the consumer to be active participators in the design process, in turn creates the value to the product.”*

Additionally sustainable consumption is one where “...the speed of production and the diversification of objects have become ends in themselves and as such are no longer able to satisfy any need whatsoever. People have grown more dependent on this system of production but, at the same time, more alienated from it ”(Max-Neef et al., 1991, p. 28). Although Max-Neef (1991) makes a clear distinction between needs and satisfiers, the later defined as forms of being, having, doing, and interacting, in order to actualize needs. Buying clothes as Fletcher states, meets consumers desire for pleasure, new experiences, status and identity formation. While reducing the amount of new clothes or buying second hand does not affect the root causes (Fletcher, 2008).

Human needs as defined by Max-Neef (1991, p. 14) “...requires a new approach to understanding reality. It compels us to perceive and assess the world, that is, people and their processes in a manner which differs completely from the conventional one.”

Niinimäki and Hassi (2011, p. 1876) in their study show that “...the products are designed and produced according to regularly changing trends that enable quick profit, rather than radically rethinking the ways of designing and manufacturing the offering that is based on consumer needs and sustainability.” The authors acknowledge the need to address how textiles and clothing should be produced understanding the consumers inclinations in a more sustainable way. In order to create a systemic change, in textiles and the clothing industry, focusing on consumers' values and needs, providing better consumer satisfaction (Niinimäki and Hassi, 2011). Consequently this may lead towards more sustainable practices. The value and life span of the product is connected to the consumers' satisfaction, and consumers

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15 Today there is a growing trend of the consumer acquiring an active role, where the role becomes a co-creator in sustainable transformation processes NIINIMÄKI, K. 2011. From Disposable to Sustainable. The Complex Interplay between Design and Consumption of Textiles and Clothing. Doctoral Degree Dissertation, Aalto University School of Art, Design and Architecture.

now are interested in changing the patterns of consumption, as stated by Niinimäki and Hassi (2011).

For this thesis, then, I use Niinimäki definition of consumer relationships with products as the one that defines sustainable consumption. Consumers needs and wants are addressed fully and rethought in order to create a sustainable consumer. Referring directly to the consumer and enabling them to active participators in the design process, in turn creates the value to the product. Consequently a sustainable consumer defines a change of pattern, a paradigm shift within human behavior.



# 3

## Literature Review

Further analysis was based on a literature review to understand and set the background of the thesis. The research was inclusive of many connected arguments, ideas and discourses. 136 references (books, journal articles, magazine and newspaper articles, reports, web pages, audiovisual material, and blogs) were classified by subject matter. The results suggest that although sustainable fashion and design is researched, studied and written about, designers and end consumers lack clarity and accessibility to the concept of sustainable fashion. Findings also indicate that designers rely on their own knowledge and act accordingly to their personal ethical belief system, where they are learning and creating along the process.

Most research and advances have been done within other areas of design, and fashion is only now catching up with other disciplines. The outcomes suggest that the effect of sustainable fashion is yet to be seen. Further knowledge and information for designers, educators and consumers should be widely diffused.

This review focuses on the most useful literature in terms of paradigm change. I will also show arguments related to sustainability and refer to the literature in education, best practices and business. Additionally I will express the ideas linked to concepts and definitions of sustainable design and fashion. I identified key aspects from impacts of the fashion industry through recent data.



Clothing used for "make your own" workshops at The Recycling Factory in Helsinki, Finland.  
Obregón, C., 2011. Helsinki. *The Recycling Factory: Make Your Own*. [photograph].

The literature reviewed addresses the concept of paradigm applied by sustainable fashion thinkers. Reflecting on society's mindset Meadows (2008) states paradigm as a set of beliefs about how the world functions. Meadows paradigm echoes her beliefs of a sustainable society. Fletcher (2008) supports the view set on sustainability as requiring something different, reflects upon Meadows beliefs.

Continuing with a paradigm shift, within the aspect of sustainable consumption Niinimäki, research states consumers are most interested in pattern change in current industrial processes (2011). Consequently consumers seek new ways of purchasing product towards which they feel attachment because of its quality and value. Otto V. Busch (2008, p.250) writes, "To change the goals or the paradigm of fashion requires a multitude of new ideas stretching from new business practices to the way we use fashion in our social lives." This view in turn, already sees a paradigm shift from the starting point of a fashion business to the manner in which consumers use fashion daily.

One position sees the current paradigm as reaching the end, an understanding of the world and new patterns of thought and have belief emerged, transforming experience, thought processes and action (Reason and Bradbury, 2001). The industrial revolution gave material welfare and control over people's lives consequently this progress caused ecological devastation, human, social and economic fragmentation (Reason and Bradbury, 2001).

Black (2008) refers to a new paradigm that sees no turning back. The author believes design thinking must be holistic in order for a new paradigm to hold. Black (2008, p. 101) believes in a change as a whole, where the industry encompassing designers, businesses, education and consumers must act succinctly to reach that paradigm shift.

Moreover, the workbook A Democratic Approach to Sustainable Futures (Flanagan 2011, p.1), "...uses structured inquiry to support classroom exploration into the problématique of global sustainability" . It was used as a model to create the syllabus I propose for the course Introduction to Sustainable Fashion Design. The workbook begins with a historical review, the challenges stated as global problématique and the continuous problems assigned to be researched for students as individual topics (ibid.) Additionally, as the students are confronted with the real challenges within the fashion industry individually, they will be collectively amazed with information overload (ibid.). "This information overload is a critical part of the class experience. It forces realization that we as a society are confronted with information overload. As citizens and emerging leaders in society the students need to understand approaches for dealing with this information overload in a constructive - progressive - fashion" (Flanagan 2011, p.1).

*“To change the goals or the paradigm of fashion requires a multitude of new ideas stretching from new business practices to the way we use fashion in our social lives.” Otto V. Busch*

Authors Flanagan and Bausch (2011) agree in resolving complex problems collectively, since individuals may feel overwhelmed by the global scope of the global problématique. They suggest for students or community members to cope with biggest picture of our times: global sustainability (ibid.). Flanagan and Bausch (2011) identify continuous critical problems, which are not resolvable in isolation, hence should be understand as a communal effort. Solutions work as a whole, hence thinking globally and therefore acting locally.

The literature identifies trends as (Blumer 1969, p.283) "...a convergence and marshaling of collective taste in a given direction." More recently Vejlggaard (2008) explains a trend as a process of change where new products and development arise. In addition (Martin 2010, p.14), "...a trend can be defined as the direction in which something (and that something can be anything) tends to move and which has a consequential impact on the culture, society, or business sector through which it moves." Consequently, this view mirrors upon the state of fashion today, where the dire impacts can be seen within its initial stages, from the designers choice of materials to consumers pattern of consumption.

Pertaining to business sustainable fashion examines issues that designers, product developers, and consumers confront in each area (Hethorn and Ulasewicz, 2008). The main principle for any company is economic growth, therefore the problem lies when focus is only done towards monetary gain over all societal and environmental values (Fletcher and Grose, 2012). Usually, short-term measures are less costly, making it difficult for designers implement long-term sustainable ones.

Fletcher and Grose (2012) agree with Banerjee (2008) design is at a curving point caused by the environmental, human and socio-economic damage the world is at. Value systems and traditional design skills must be reevaluated. Bateson (1972) and Reason (2001) both argue as a crucial task in this paradigm is to learn to think in new ways. Furthermore, an emerging characteristic in a new paradigm would be a participatory worldview according to Reason (2001). Recent research (Niinimäki, 2011) has found that companies are trying to work with young designers in a new way, inviting them to participate in the process and creating unique fashion collections of unsold clothes. With the trend of globalized mass fashion industry fashion design students are faced with a world affected by an unstable economy, ecological devastation, faster production processes, unethical working conditions and a throwaway society (Niinimäki, 2011).

Considering education Lee and Regni (2009) suggest teachers and consumers of fashion need to instruct and reach out to demand quality. Additionally they urge fashion students to research sustain-



YOUTH  
**FASHION**<sub>SUMMIT</sub>

## CONSUMER SOLUTIONS

**The challenge:** Making common sense... common!

**The solution:** Empowering new consumers to be smart consumers.

**The critical path:** Achieved by understanding the “Z” generation, their passion, emotional attachment and buying power, as well as using influential ambassadors for sustainability. It’s not about mass-consumption, it’s about the style.

**Recommendation:** We invite the industry to take the first steps towards the future.

Create memories, not junk.



**kea**  
COPENHAGEN SCHOOL OF  
DESIGN AND TECHNOLOGY

NORDIC**FASHION**ASSOCIATION

One of the four C's (Cost, Communication, Convenience) at the youth fashion summit in May 2012. Obregón, C., 2012. Copenhagen. Nordic Fashion Association Youth Fashion Summit.: *Slide*. [photograph].

able materials and fabrics, and to assess the social and environmental impact of the fashion industry (Lee and Regni, 2009).

Serious analyses were based on examples from the curriculum of the Kolding School of Design in Denmark. The authors discussed how the notion of design responsibility could be integrated in design education, describing ways of training and encouraging students to become responsible and sustainability-oriented designers (Leerberg et al., 2010). Clayton and Clarke (2010) believe in 'real' contexts, students have the opportunity to become active agents of change, creating flexible and adaptable design that responds to the social/cultural needs of their profession and community.

*“Furthermore becoming agents of change motto upon fashion graduates may in turn foster sustainable solutions...”*

Furthermore becoming agents of change motto upon fashion graduates may in turn foster sustainable solutions within from concept to completion. As recent literature argues the concern with shifting the role of fashion designers and looks to examples where the designer changes from a stylist or creator into a communicator, activist or facilitator (Fletcher and Grose, 2012). In addition, the authors Fletcher and Grose (2012) suggest by molding the curriculum from the classroom to hands on workshops; Internet competitions and calls to action. Delind and Link (2009) agree, education should be real. Carpenter and Dyball (2009) identify the relationship of students everyday lives affects the environment and they should study accordingly (Wals, 2011). Therefore it is crucial for institutions to bring in real issues encountered in the fashion industry, allowing students to reflect and discern in their design process.

Design is faced with the responsibility of involvement towards a sustainable society as written by authors Spangenberg, Fuad-Luke and Blincoe (2010). Problems pertaining to the environment and mankind as a whole are strongly interrelated and should be addressed as a system of problems (Bausch, 1970). Manzini (2004) expressed how moving towards a sustainable society will affect every dimension of the socio-technical system, touching the scale of time and space we live in. Sustainability focuses on better and more effective solutions from designers (Shedroff and Lovins, 2009). Design within this context can be considered as an informed exercise centered on a known decision, an action and embodied ethics (Willis, 2004).

Consequently, Design for Environmental Sustainability (Vezzoli and Manzini 2008, p.61), define as a basic concept that "...design-wise it is a step back from the product, starting with its function, with the satisfaction it is supposed to bring to the user." Furthermore as Fry (1994, p.10) argues, "Design never starts at zero, for it always starts with an already existing designed object and comes from a particular environment." McDonough and Braungart (2002) believe in a new design paradigm, when designers innovate and work as part of the whole ecosystem.

Max-Neef (1991) combined two categories of needs, which he called existential and axiological. The author defined existential needs of Being, Having, Doing, and Interacting are combined with the axiological needs of Subsistence, Protection, Affection, Understanding, Participation, Idleness, Creation, Identity and Freedom. Towards sustainable consumption designers play a key role in creating a new kind of understanding of sustainable and environmental friendly design (Niinimäki and Hassi, 2011). Furthermore Birtwistle and Moore (2007, p.210) research identified the "...influences in increased purchase behavior and the tendency to keep clothing for a shorter time" .

To Die For: Is Fashion Wearing Out the World (Siegle, 2011) reveals truths about 'high street fashion'.<sup>16</sup> Siegle research's consumer behavior in the U.K. by studying the labels used most commonly and the unethical practices linked to the brands. Siegle advocates for a new design era, which looks at the whole life cycle of fashion.

Authors Fletcher and Grose (2012) examine in Fashion and Sustainability: Design For Change how sustainability can possibly change both the fashion system and the innovators who work within it. The authors believe it must be transformed through product innovation, renovating fashion systems and fashion designers role in education.

Flanagan and Bausch (2011) through A Democratic Approach to Sustainable Futures explore the problématique of global sustainability through educational workshops. The authors intend for students and community members to see global problems as a collective effort, not to be solvable in isolation. Author Bausch (2011) wrote his latest entry

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16 High street fashion: Term used in the U.K. referring to main street fashion geared to meet the requirements of, and readily available for purchase by the general public. Example of retailers as: Topshop, H&M, or Primark. The American Heritage® Dictionary of the English Language. .2003. Boston: Houghton Mifflin Company.

on the Problématique and the Club of Rome for the journal *A Democratic Approach to Sustainable Futures*.

Wals (2011) asks critical questions in environmental and sustainable education in how to change students, therefore how to create the best conditions which support changes in the environment?

Recently United Nations Environment Programme (UNEP et al., 2011) published the informative guide to Sustainability Labeling and Certification in Textile and Fashion. Focusing the sustainability goal for each label. Authors Guercini and Runfola (2011) focus on buyer-seller relationships and supply chain management where alternatives for retailers have developed in sourcing strategies, as well as the complexity of product and range.

The topic of sustainable fashion is discussed through many websites and blogs. The most relevant are: London College of Fashion: <http://www.fashion.arts.ac.uk/>; news headlines and market watch in apparel, fibers, dyes and chemicals <http://www.fibre2fashion.com/>; industry body dedicated to sustainable fashion <http://www.ethicalfashionforum.com/>; lifestyle of Health and Sustainability <http://www.lohas.com/>; marketplace for designers sources the latest materials around the world <http://www.source4style.com/>; practice-based sustainable design strategies in research <http://blog.tedresearch.net/>.

To gain a better understanding of natural dyes the lifestyle website <http://www.betterthinking.co.uk/>, conducted the study "Dyeing for a change: current conventions and new futures in the textile colour industry" (2006), addresses the issue from how conventionally chemically dyes affect the end user. Furthermore, Riikka Räisänen, dissertation, Anthraquinones from the fungus *Dermocybe sanguinea* as Textile Dyes (Räisänen, 2002), studies natural colorants as textile dyes. With regards to the subject matter, proceedings from International Symposium and Exhibition on Natural Dyes (ISEND, 2011) conference were reviewed.

More specifically, when looking at the negative impact of fashion industry within manufacturing of garments and textiles, Threads of

Labour (Hurley and Miller, 2008) addresses human and societal issues. The Mistra Report (Allwood et al., 2006) by the Institute for Manufacturing, University of Cambridge, states impacts pertaining to the environment, people, and business.

### **3.1 Setting the Background**

The main impacts of textiles processing and disposal of clothing are reviewed below in order to understand some of the effects on the environment and human health.

Fashion textiles and the supply chain are "...particularly sensitive to sustainability due to its inherent characteristics and some specific trends" (Brito and Carbone 2008, p.6). The international trade in apparel totals more than US \$310 billion per year.<sup>17</sup> The clothing and textile industry employs about 26.5 million people globally, mainly in Asia. Clothing and textiles represent 7% of world exports, with China in the lead (WBSCD, 2008). Every few weeks, collections are being launched; volumes from the fashion industry are increasing, while prices and employment are decreasing. Fashion designers are in a continuous cycle to meet deadlines and must create four collections a year including mini collections, if not more. Making beautiful, desirable, and disposable clothes has been the purpose. A fashion label comes with an expiration date, from ready-to-wear to cheap designer copies.

Fashion's huge market and enormous profits make this industry's devastating environmental impact go practically ignored. Even consumers who are committed to sustainable practices and lifestyles often do not know the amounts of water and chemicals going into cotton cultivation and production for the clothes they wear (Tobiasson and Kviseth, 2011). They may not know that it takes 7,000-29,000 litres (1,849-7,661 gallons) of water to produce 1 kilo (2.20 pounds) of cotton to make their favorite T-shirt (Reis and Wiedemann, J. 2010), or that thousands of chemicals are released into nature during the production phase, or that mass-produced polyester garments contain antimony, a metal known to cause cancer (McDonough and Braungart, 2002).

Environmental impacts vary in scope and intensity as with human

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17 This sum does not include the world trade in textiles, which adds up to close to 220 billion, or 2% of worlds merchandise trade. Consumers worldwide spend around US \$1 trillion on clothes PLUNKETT, J. W. 2008. Plunkett's apparel and textiles industry almanac, Plunkett Research.

health. During the growing, harvesting and subsequent processing or storage periods of fabrics as for example with cotton dusting occurs.

The dust is classified as: inhalable,<sup>18</sup> thoracic<sup>19</sup> and respirable.<sup>20</sup> Workers exposed to the cotton dust may suffer from yssionsis, an acute breathing disorder suffered as shortness of breath and/ or tightening of the chest with constant coughing and phlegm production (Kumar, 2008).

Hazardous chemicals constitute long-term threats to human health and the environment (Charter and Tischner, 2001). These chemicals are persistent and have a bio-accumulative effect, which can interfere with the health of people and wildlife, as reported by Greenpeace in 2011.

*“fashion designers are in a continuous cycle to meet deadlines and must create four collections a year including mini collections.”*

Nonetheless, another impact to the environment is the amount of clothing ending up in landfills, consequently occupying large amounts of space otherwise used for food agriculture. According to the United States Environmental Agency, clothes in landfills produce toxic fumes and leachate, an often-contaminated liquid (USEPA, 1995). The decomposing of clothes is a complex process, depending on the material. Synthetics will not decompose, but cotton will decompose during oxidation hydrolysis, if exposed to ultra-violet light and humidity (U.S.E.P., 2000). The Council for Textile Recycling estimated in 2009, 1.3 million tons of textiles in clothing were recovered for recycling in the United States (SMART, 1997). Only 5 percent of used clothing is truly not reusable, although wet textile, which cannot be recycled, ends up in the landfill or is incinerated (Schweigert, 2011).

The use of chemicals characterizes the processing facets of a textile from bleaching, scouring, colouring to finishing. In the year 2011, Greenpeace International reported on two factories in China using heavy metals and hazardous chemicals. Alkyphenols, used for washing, are known to have hormone-disrupting effects (Greenpeace, 2011). One of the main concerns is the persistent effect, since they do not break down in the environment and build up in the food chain through the organisms absorbing them (ibid.). This persistent effect pollutes the water, ending up in surrounding households.

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18 Inhalable Dust: It is a term used to describe dust that is hazardous when deposited anywhere in the respiratory tree including the mouth and nose KUMAR, R. S. 2008. Cotton dust - Impact on human health and environment in the textile industry. Textile Magazine. New Delhi.

19 Thoracic Dust: It is defined as those materials that are hazardous when deposited anywhere within the lung airways and the gas exchange region (ibid.).

20 Respirable Dust: Respirable dust is defined as that fraction of the dust reaching alveolar region of the lungs (ibid.).

Yet another risk for human health caused by textile factories is noise pollution. A study done in India evaluated the consequences of the textile industry upon humans and found irreversible hearing loss, causing temporary and permanent threshold shift, tinnitus (ringing in the ears), non-auditory effects, cardiovascular problems, sleep disorders, mental fatigue and stress, increased blood pressure, and a loss of working efficiency (Devadasan, 2006).

The textile industry also affects nature's ecological balance by depletion of natural resources such as water and plants and by overuse of soil. In 2005, UNESCO-IHE Institute for Water Education in the Netherlands, studied water use for cotton cultivation. The study found the demand for new textiles totalled eighty million tons (eighty billion kilograms) in 2007 (Siegle, 2011). The production for a large quantity of fabric to become a garment takes 1,074 billion kilowatt hours of electricity, totals 132 million tons of coal and approximately between six and nine trillion liters of water (Siegle, 2011). "The textile industry is one of the biggest water consumers in the world, using 3.2 per cent of all the 1,400km of water available to human population" (ibid., p.105).





# 4

## **Sustainable Fashion Education and Research Trends**

One of the working hypotheses of this thesis is that as a result of the environmental impact of the fashion industry, new trends in education should be promoted in order to begin changing the current industrial paradigm at root. Therefore, Sustainable fashion university-based education is analyzed within this chapter.

It is essential to support new designers with sustainable processes in order to create a more holistic industry from its core. Teaching about consumption, working conditions, and creative manners to approach fashions industrial processes in turn, can bring more prepared designers on real cause and effect realities.



Collaborative workshop participants make their own garments from recycled clothes.  
Obregón, C., 2011. Helsinki. *The Recycling Factory: Make Your Own*. [photograph]

Looking into the area of fashion where a change of paradigm might create a more global shift does this. Developments have taken place in masters programs caused by growing awareness and interest. The trend in the United States, the UK, Finland, and Germany is to incorporate courses in the curriculum for graduate studies yet a new paradigm is far to be seen within fashion education. Nonetheless, the most important advances within sustainable fashion seem to be at the doctoral level where committed researchers are working in areas such as consumer behavior, industrial fashion processes, and interaction between technology and design.

## **4.1 Sustainable Fashion Design Education**

Fashion design schools have been traditionally aligned with the 20th century industrial/manufacturing paradigm. In Europe, most fashion design schools follow “...3+2 year model, a bachelor’s degree followed by a master’s degree,” (Wende 2009, p.322). Graduate levels are related more towards research, and further concentration and specialization characterized by “...trends of convergence, aiming for harmonization and transparency; and divergence, searching for more diversity” (ibid., p. 324). These trends aim to give a global status and attract students from other regions and international ones.<sup>21</sup>

Although there is increase awareness to sustainable issues, an overall gap is felt in the educational curriculum where fashion students still need to connect to a wider scope of the design profession in order to understand the triple bottom line (Charter and Tischner, 2001). Fletcher and Grose (2012, p. 156) suggest designers are “...more deeply engaged in culture and society and their institutions than at present, and over the long term this will have the potential to afford designers to lead systematic change.” Teaching design responsibility is to create awareness of how designers may be part of building value and meaning in people’s lives through product and services (ibid. cited from Margolin, 2002; Riisberg, 2006).

In the United States a design student may pursue a four-year Bachelor in Arts program or a two year Associate in Applied Sciences degree. The master’s is an all-purpose degree and was originally a model

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21 “European universities have for long modeled themselves along the lines of some major models, particularly the ideal model of the university envisaged nearly two centuries ago by Alexander von Humboldt, in his reform of the German university, which sets research at the heart of the university and indeed makes it the basis of teaching. Today the trend is away from these models and towards greater differentiation” (European Commission 2003a, 5–6). WENDE, M. V. D. 2009. European Responses to Global Competitiveness in Higher Education [Online]. eScholarship, University of California. Available at: <http://www.escholarship.org/uc/item/718832p2>.

from Great Britain, but in fashion it is an unusual option (Herubel, 2005).

As for the role of a fashion educator changing in the future, Fashion and Sustainability Design For Change (2012), suggests that education works best when it not confined to a classroom. Most importantly Fletcher and Grose affirm that building knowledge is best achieved through experience, bringing real world knowledge and academia to the community, where they can become catalysts for discussion.

*“we need to address the problems of how to create a more sustainable future. Design is the key to the process.”*

Fashion education has followed a path paved by creativity, imagination, and structure. But can the new need for sustainable fashion design be taught?

*You can teach fashion. What you can't teach is to be talented. You can teach technical skills, how to create some three-dimensional idea. You can teach students how to enhance their imaginations by filling their mind...but you can't teach them how to make the decisions about what they choose for themselves. And that's where the talent lies...picking...they can make their own recipes (Grau, 2011).*

Jane Rapley, dean of fashion and textiles at Central Saint Martins argues, that though talent cannot be taught, techniques can. Consequently, sustainable fashion techniques should be naturally embedded within the curriculum.

The Fashion Institute of Technology (2012), in New York City, offers a continuing education course on sustainable design but it is not included in the core studies of their fashion design program. The course focuses on sustainable business practices for professional design-oriented entrepreneurs. It provides four courses on fashion: material and eco-labels, responsible manufacturing and product lifecycle, ethical fashion and sourcing, and the direct application of sustainable textiles (ibid.).

California College of Arts (CCA, 2012), began a course in sustainable design in 1999, devised by Lynda Grose, the fashion designer behind

Esprit's e-collection (Furst, 2012). Now, CCA offers its Sustainable Seminar as a requirement in the four-year, 51 credits, fashion design program, as well as having a New Materials Resource Center, which offers a wide range of sustainable and interdisciplinary library of new materials.

Parsons New School for Design, offers a zero-waste garment course. Although sustainability fashion courses are not offered within the core four-year bachelors program, or in the masters, the school has a platform for sustainability issues, its Rethinking Fashion Series (2012). The Series challenges emerging designers and professionals to rethink embedded design practices, materials, and tools and to incorporate them in designing responsibly (ibid.). Business schools at Columbia University and NYU asked to work with higher education fashion schools in order to create collaboration with business entrepreneurs and fashion. This collaboration intends to promote raw creative talent, which stands out in New York City, and to sustain the possibility for young designers of working and producing locally as advocated by Save The Garment Center Organization (2012). The industry embraces entrepreneurial paths within a business discipline as an incentive to promote New York's own Garment Center.

Perhaps it's necessary to mention a new crop of master's programs working across a multi-disciplinary platform within sustainable design. One of the colleges offering an MA in design for Sustainability is the Savannah College of Art and Design in Savannah, Georgia. Students go deep into green materials with gaining experience in viewing sustainability as key to human survival in the 21st Century (Rajagopal, 2011). Applicants can come from different fields of design and are passionate for creating sustainable solutions to real problems, as defined by Ursula Tischner, professor and author of Sustainable solutions: developing products and services for the future (2001).

In Europe, Central Saint Martins - University of the Arts London- offers short-based courses, such as Sustainable Fashion, given by well-known designer Nin Castle, who works with upcycling materials (Martins, 2012). London College of Fashion offers masters in fashion and the environment. The master's looks at major impacts of

the industry and how to tackle them within sustainability frame. The concept evolves towards generating design professionals who will be able to work within the field and design future concepts by interpreting the major influences in the fashion industry as per course description on the London College of Fashion website (2012). The school is linked with the Centre for Sustainable Fashion, working with theory and practice. Researchers and master's students collaborate in reinterpreting fashion design. The Centre counts renowned researchers Kate Fletcher and Sandy Black, the author of *Eco Chic*, among its researchers and professors respectively.

The first international one-year Master's Program in Sustainable Fashion will commence at Esmod Berlin in Fall 2012. The course is structured to investigate social, ecological, ethical, and economically sustainable fashion practices as referenced from the website *Sustainability in Fashion* (2012). The Master's Program will focus on four areas: sustainable knowledge, sustainable design strategies, sustainable production and textiles, and sustainable marketing (ibid.). There is not yet a fully sustainable fashion design curriculum at the bachelor's level and only a specialization at the master's level.

While at Aalto University School of Arts, Design and Architecture, the commitment to a sustainable fashion education is one yet to be seen included in the curriculum, yet students at the master's level can acquire studies within the Masters Creative Sustainability program as minor multidisciplinary programme. Students come from different Aalto schools and disciplines. Created in 2010 for students who have a true interest in sustainability coming from design fields such as industrial, product, interior, graphic as well as architecture. The program suggests the importance of connecting creativity with sustainability tools such as: responsible business activities, strategic corporate responsibility, and sustainable production practices.

Recently Kirsi Niinimäki presented her doctoral thesis, *From Disposable to Sustainable, The Complex Interplay between Design and Consumption of Textiles and Clothing*. Niinimäki understands first hand the complexities of sustainability, and therefore she sees the overall level of understanding as still on the surface, even though many master's

theses on sustainable fashion have already been presented. Small fashion companies with a sustainable ethos have sprung up in Finland. The trend is changing, she confirms. The European Union, she adds, is tightening legislation in producer responsibility and waste issues. She believes that more research and knowledge in the field, where students need professors and teachers who have the most updated and newest information in the area, is desperately needed. Finally, she says Aalto University's focus in research and teaching sustainable design therefore fashion should be covered within the program, she hopes in the future.<sup>22</sup>

The next generation of designers must learn the entire process of sustainability: from manufacturing and production to marketing. Accordingly, New York sustainable fashion designers Bahar Shapar and Tara St. James created Guided as a response to the lack of education, resources and information within sustainable fashion. Shapar and St. James argue that information is passed around from friend-to-friend, colleague-to-colleague, and person-to-person.<sup>51</sup> Designers have to start from the beginning, therefore, as a reaction to the lack of localized, centralized, or standardized vocabularies.

In the apparel and textile industry's leading online resource, just-style.com (Barrie, 2009), editor Leonie Barrie wrote in her Insight section about the importance of including sustainable fashion in the design curriculums. Interviewing Professor Clare Johnston, head of the textiles program at the Royal College of Art, she refers to the college graduates as not interested in environmental and sustainability issues, continues by firmly acknowledging the need to incorporate in the curriculum at an early stage indicates. Students need to relate to it, probably, at the school level. Her counterpart, Professor Sass Brown, from the Fashion Institute of Technology, claims students are thinking of their futures from the perspective of a designer and do not have the time for sustainability. While Jane Rapley, dean of Central Saint Martins College of Art and Design spotlights the difficulty students have in comprehending ethical issues, since it is not part of their schooling experience (Barrie, 2009). Barrie concludes education alone cannot solve the issue, but that it must be part of the spirit of the times. "Only once it becomes a much more debated question within our own socie-

*“To propose new values and new ways of thinking, an era of human-centered development, its imperative for designers to assume new roles.” Cumulus Association*

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22 Niinimäki answered to several questions on sustainable education through an email communication OBREGÓN, C. carolina.obregon@aalto.fi, 2012. *Sustainable research: Fashion and Textile questions.*[email] Message to K. Niinimäki (kirsi.niinimaki@aalto.fi). Sent Thursday March 8 2012, 11:18. [Accessed April 20 2012].

ties, politics, and economics, can designers begin to understand it and address it. It has to be part of the bigger context” (Barrie, 2009).

Around 2007, higher education started to focus on the need to create practice-led and theoretically-based research within the field of design and sustainability, with universities acting as agents of change towards sustainability, as per J.A. Hansen and M. Lehmann (2006, p.822): 1) Locally, universities are part of an innovative society, in existence or in the process of becoming; and 2) Internationally, universities participate in networking to sustain research and education. The author argues the importance of a continuation of sustainable fashion education from formation to master’s.

Delind and Link (Mcmillin and Dyball, 2009) argued sustainable education is best taught by not seeing it as a “grand abstraction” or an isolated problem to be solved, it’s best that it be tangible and real. The importance lies in reflexive learning, where students understand that what they do in their everyday lives will affect the environment, according to Carpenter and Dyball (ibid.). While, Clungston and Calder (2009) recognized learners are environmental stakeholders however they choose to live and work.

Based on another theoretical proposal towards sustainable education, it explores two main questions: What should we be changing in students? How can we create the right conditions and supportive environment to allow students to develop in the face of change (Wals, 2007)? Increasing awareness of environmental impacts can create responsible environmental behavior (ibid.). On the other hand, these models may be oversimplifying the real situation, since people’s environmental behaviors are quite complex and must be played into the curriculum (ibid.).

Wals (2011) recommends a range of new forms of learning within emerging practices such as: trans-disciplinary learning, transformative learning, anticipatory learning, collaborative learning, and social learning. Focused on “real” issues for engaging students, learning is viewed as trans-disciplinary, where interaction with others and with the environment is common, several perspectives are considered, and learning goals can change or shift as learning progresses. Structures and spaces, which shaped education for centuries, are shifting as learning becomes cross-boundary yet (Wals, 2011). A crucial aspect of sustainable education is the ability to cope with uncertainty, which represents a challenge for higher education (ibid.).

Clearly, it’s crucial to include a sustainable fashion education within the status quo: a shift in paradigm, a shift of mind related to how fashion designers in the present relate and understand the environment. To do better is to be better and exceptionally educated in all fashion fronts,



from the environment, to manufacturing, to processing and finishing, to the materials, and most importantly to the people who are actively working for collections to become a catwalk reality.

Universities face an interesting moment of how to address the necessities of future fashion designers. Environmental, social, and business issues, from the beginning of a designer's education, are where it can start. Universities could take into consideration the impacts of fashion designers as a whole and generate creative solutions in the classroom. Through partnerships with business and society, resourceful solutions can be fostered for the crisis at hand (Hansena and Lehmann, 2006). Graduates, who can participate in these new educational initiatives, will fill key positions in fashion industry jobs and can be new leaders in the change of paradigm.

Cumulus, the International Association of Universities and Colleges of Art, Design and Media, founded in 1990, was created by European universities in hopes of bridging collaboration between academics, students, and the European Erasmus program (2011). Two Cumulus conferences are given each year, featuring working papers, workshops, and documenting all related information on design, the arts, and media. Cumulus has 176 members from 44 countries, as of 2011. Its central offices can be found in Helsinki, Finland, at Aalto University School of the Arts, Design & Architecture.

In 2008, Cumulus signed the Kyoto Design Declaration, committing to share global responsibility for building sustainable, human-centered, and creative societies. The Declaration is comprised of five key points, which are quoted from the Cumulus website: "To propose new values and new ways of thinking, an era of human-centered development, the imperative for designers to assume new roles, seeking collaboration in forwarding the ideals of sustainable development, and the power to make fundamental improvements to our world."

## **4.2 Research in Sustainable Fashion**

Important advances within sustainable fashion education are being done at the doctoral level and by professors at several universities, in areas such as technology, sustainable production processes and sustainable consumption. Therefore I reviewed these projects in order to understand the diversity of areas of where sustainable fashion can be applied because fashion creativity does not only lie within a design but in the whole supply chain, from concept to completion.

In 2009 the Gucci group consolidated, the first PhD sustainable design scholarship named 'Sustainable Technology for Future Luxury,' at Central Saint Martins, in response to 21st Century concerns. The PhD intends to develop through design innovation and science-led projects

where innovation in materials holds the key for sustainable fashion (Martins, 2012). The new methods and processes are key for the luxury sector as an answer to the environmental and climate change impacts

The Center For Sustainable Fashion/London College of Fashion (2012) has supported doctoral projects on challenging traditional design processes, catalytic clothing, and transforming the potential of clothing.

Cornell University has a program in sustainability in fashion and textiles in the department of Fiber Science & Apparel Design (FSAD). An exemplary research at Cornell spans are the projects as highlighted by associate professor Lewis Van Dyk (2012), "...the way people contribute meaning and substance to the fashion system to interactions between apparel design and technology." Professors are also thinking about how apparel is designed, produced, and distributed and in what ways can new and developing technologies, textile nanotechnology, and smart fiber be used sustainably. Another research area is within the consumer led vision of the activity and phenomena of fashion itself as referred by on the (Cornell, 2012). At Cornell, the Hinestroza Research Group is working synergistically to find different approaches towards new materials, and sustainability in manufacturing processes, such as dyeing textiles through nanotechnology. Although, nanotechnology is a new area in dyeing chemistry and there is yet not considerable scientific evidence of its sustainability properties, but the Hinestroza Research Group is on development of such processes.

Professors and students at the University of Delaware are working on several sustainable fashion research projects within the Fashion and Apparel Studies Department. The research is focused on sustainable apparel, sustainable business, and consumers. The 100-Mile Suit, made by researcher Kelly Cobb, developed a man's suit with material produced within 100 miles from Philadelphia by asking the question "Where did you get your outfit?" Researcher Marsha Dickson is studying garment-producing countries to find emerging corporate social responsibility leaders in manufacturing; the researcher Sharron Lennon is looking at the 'Black Friday' phenomenon and consumer misbehavior and irresponsibility (Delaware, 2012).

The Royal Danish Academy of Fine Arts sponsors through MOKO, an interdisciplinary platform for fashion research in Scandinavia. It works from with practice-led research from the university but with the industry to seek innovative ideas for the betterment of fashion (MOKO, 2012). Julie Sommerlund addresses the need for researchers working with the industry, as a way to tackle real problems collaboratively. As the demands for sustainable production grows the industry is confronted to deliver innovative methods. Sommerlund argues:

*The fashion industry is paradoxical in the sense that it is so quick and so incredibly innovative, but at the same time - and maybe because of that - it tends to ignore everything that is not related to the upcoming collection. The internal workings of the industry are old-fashioned. For example, things like Human Resources and life-long learning, which are buzzwords in other industries, have no presence in the fashion industry. It's one of the industries that have the least to offer in terms of ongoing training and career development. In all other areas than clothing and fashion, the industry really needs innovation (DCDR 2011, p.35).*

Aalto University has sponsored major advances at the doctoral level with the Sustainable Design Research Group, Nodus. In addition, it is developing the project Baltic Fashion in collaboration with other members of the EU. Baltic Fashion looks at innovative garment constructions and new business models with transnational cooperation among countries of the Baltic region. The project commenced in September 2010 and will end by the summer of 2013. Baltic fashion will recover manufacturing fashion processes and bring back production to a traditional fashion manufacturing area. The project has various partners in the private and public sector with funding reaching over two million euros (Baltic, 2012).



# 5

## Data and Methods

This chapter presents an analysis of the data obtained in the interviews performed for this study. The objective of the interviews was to find look at a survey of some sustainable trends in order to have an idea of what may be indicative of a possible paradigm change for the future. Though these interviews are a small sample of alternative fashion design practices the purpose was to engage in a form of social inquiry that allows better understanding or challenging the existing literature and the contextual review, case studies, and 'trends'.

Based on my readings of the literature on sustainable fashion design I asked the following questions to the design practitioners:

- 1. WHY DID YOU BEGIN TO RETHINK FASHION AND MOVE TOWARDS WORKING SUSTAINABLY?**
- 2. FOR YOUNG FASHION DESIGNERS IT SEEMS THAT THE ONLY WAY TO ADAPT TO THE MARKET IS TO DESIGN FOR A TRADITIONAL UNSUSTAINABLE FASHION HOUSE OR COMPANY. TO START YOUR OWN COLLECTION IS NOT ONLY**

**VERY DIFFICULT BUT AT THE SAME TIME YOU MAY JUST BE ADDING MORE PRODUCTS TO AN ALREADY OVERSTOCKED INDUSTRY. IS THIS A CATCH 22 FOR DESIGNERS WHO WANT TO CHANGE THINGS? HOW DID YOU DEAL WITH THIS ISSUE IN YOUR OWN WORK: TO BE SUSTAINABLE WITHOUT CONTRIBUTING TO THE PROBLEM?**

- 3. HOW CAN INDEPENDENT DESIGNERS CHANGE THE INDUSTRIAL PARADIGM?**
- 4. IN YOUR VIEW HOW OPEN ARE TRADITIONAL FASHION MULTINATIONAL FASHION COMPANIES ACCEPTING SUSTAINABILITY? ARE THEY REALLY CHANGING OR ARE THEY GREENING FASHION BECAUSE OF A TREND?**
- 5. HOW CAN DESIGNERS CHANGE THE FASHION CYCLES OF CONSUMERS AND CHANGE FAST CYCLES?**
- 6. HOW CAN WE REEDUCATE THE CONSUMER THAT TAUGHT TO BUY CONTINUOUSLY?**
- 7. HOW DO YOU SEE THE FASHION ETHICAL CONSUMER? ARE PEOPLE TRULY BECOMING MORE SUSTAINABLE CONSCIENTIOUS OR IS IT A PASSING TREND?**
- 8. HOW CAN WE CLOSE LOOP AND MAKE THE FASHION INDUSTRY CRADLE TO CRADLE INSTEAD OF CRADLE TO GRAVE?**
- 9. WHAT STEPS NEEDS TO BE TAKEN TOWARDS CREATING A NEW PARADIGM IN THE FASHION INDUSTRY FOR IT TO BECOME TRULY SUSTAINABLE?**
- 10. ARE THE STEPS BEING TAKEN WITHIN THE INDUSTRY ENOUGH? IS THERE ANYTHING MORE RADICAL THAT COULD BE DONE RIGHT NOW THAT WOULD CHANGE THE CURRENT PARADIGM?**

The purpose of the interviews was to find local led sustainable fashion trends that have been working towards changing the current paradigm. Consequently understanding the viewpoints of the interviewees was key for the development of the thesis. The most indicative participants were sought out from business, design, non-profit organization, research and academia. The interviews were performed with diverse sustainable fashion participants:

- **NATALIA ALLEN:** Ecological Fashion Consultancy
- **MATILDA WENDELBOE:** Cradle to Cradle Fashion
- **GLOBE HOPE:** Ecology, Ethics and Aesthetics
- **NON-PROFIT ORGANIZATION:** The Recycling Factory
- **CARLA FERNANDEZ:** Slow local fashion
- **KATE FLETCHER:** Sustainable fashion academic
- **KIRSI NIINIMÄKI:** Post-doctoral researcher in sustainable fashion design
- **RIIKKA RÄISÄNEN:** Docent, Ph.D., University Lecturer Craft Studies
- **JUAN P. HINESTROZA:** Associate professor at Cornell University, Department of Fiber Science and Apparel Design

By using a semi structured interview approach I sought to find original answers to widely known questions. The people I interviewed represent unique approaches to areas in sustainable fashion and were chosen because they were working within the trend and are committed to change the current industrial paradigm.

The qualitative interviews are especially suitable where opinions are sought. Consequently the qualitative interviews are also suitable when the results are to be placed in a broader context. The interviews bring about personal interaction with the interviewed and the information received may be deepened and clarified later on (Holloway, 1997). Furthermore the economic and cultural framework was taken into account as the context from which the interviewees were selected.

The seven interviews were conducted between July 3, 2011 and March 11, 2012. The sample of interview participants included four fashion designers: Natalia Allen, Matilda Wendelboe, and Carla Fernandez; one sustainable fashion business: Globe Hope; one non-profit organization: The Recycling Factory; sustainable fashion doctor of philosophy: Kate Fletcher; and Kirsi Niinimäki doctor of arts in design. The main criteria for choosing the participants were their expertise and to acquire a wide understanding of their point of view within the field.

The interviewees were approached first by email and later were interviewed either in person, by email or by Skype. Globe Hope the Recycling Factory and researcher Riikka Räisänen were conducted personally. The first at Globe Hope's headquarters in Nummela, Finland, second at Café Lasipalatsi in the city center of Helsinki and the latter at Räisänen office at the University of Helsinki. Matilda Wendelboe, Carla Fernandez, and Juan P. Hinestroza were interviewed via Skype and Kate Fletcher and Kirsi Niinimäki were answered the questions via email.

## **5.1 Coding the Data**

I was looking to "co-create a story" with the results (Foss and Waters, 2003). I was looking for pertinent answers to the research question by finding specificity and concreteness. I paraphrased the data and then labelled it by placing the most relevant and important information. The labels came from new personal observations and insights. The interviews pertain to a diversity of areas in sustainable fashion, varying in responsibilities and differing in the work they perform within the trend. From this analysis the following data was found and the themes were classified accordingly by:

- 1) SUSTAINABLE FASHION.**
- 2) SUSTAINABLE DESIGNERS**
- 3) THE FASHION BUSINESS**
- 4) THE ROLE OF DESIGNERS AND CONSUMERS**
- 5) CHANGE OF PARADIGM**
- 6) FASHION EDUCATION**

The objective was to find out how designers, entrepreneurs, educators, and small businesses in sustainable fashion were addressing the current paradigm and creating change in their fields of expertise. The first major theme was chosen in order to understand the background and context of sustainable fashion and how they viewed it. The second theme was specific to the area of design and the fundamental practices that were being performed.

The third theme covered the view towards fashion in general and what suggestions the interviewees might have in order for it to become more sustainable. The fourth theme examined the relationship between designers and consumers. The fifth theme was directly related to the main question and the paradigm shift within their realm of fashion. The final theme covered the area of education and how the interviewees related directly or indirectly to this topic.

## **5.2 Conceptual Schema**

According to Foss (2003), the conceptual schema connects the data jointly, responds to the research questions clearly, goes further than what is evident and allows the researcher to make a unique contribution to the area in question. Therefore the interviews represented various sustainable fashion ideas and brought about major themes classified as such. The aim was to find valuable and unique information to relate to the theory exposed previously.







# 6

## Results

The order of the themes were done in reference to their importance and compiled and organized by elimination of unnecessary data. Nevertheless, it represents a small segment of sustainable fashion practices, therefore it is fair to say that it is a work in progress and has been addressed as such. Subsequently the topic's complexity and vastness makes it presumptuous to assume significant answers within this thesis.

According to the majority of the interviewees, when rethinking fashion and moving towards working sustainably the evidence provided demonstrates that in order for a change of paradigm to happen global consensus must be reached. Consequently the interviewees are working towards this change within their communities. They agreed that sustainable fashion was a trend and that it was not sufficient to cause a mayor paradigm shift because sustainable fashion is yet to reach the mainstream. Nonetheless, the designers, educators, business entrepreneurs I interviewed have a passion for sustainability and it affects their lifestyles not only within their work but also in their daily lives.

The results of the interviews are presented in the order of the six themes identified in the data analysis. The answers were placed together and are discussed in this section by presenting the findings in quotes.

## 1) Sustainable fashion

*Today still separate to business in that it is an 'add on' rather than an essential part of business. I would say that except for the leading proponents of CSR,<sup>28</sup> sustainability is pursued as a reactive device to deflect criticism. In other places by contrast it is being used to leverage social value, which brings economic value. Though this is rare (Fletcher, 2012).*



28 CSR: Corporate Social Responsibility policy functions in a business as it monitors and regulates lawful and ethical standards. FLETCHER, K. 2008. *Sustainable fashion and textiles: design journeys*. London, Earthscan.

*[...]sustainability is an accelerator of new technology, innovation, and prosperity (Hinestroza, 2012).*

*[...] many have started their own small companies and they lean strongly on sustainable fashion so the trend is changing (Fletcher, 2012).*

*[...] eco fashion looks too eco, is looked upon as an added value, somehow needs to be more recognizable as mainstream and not artisanal...(Raisänen, 2012)*

*Adding cotton to Nanomaterial's would be an added value throughout the supply chain, especially for the farmer, where they would cash out for much more than the regular price(Hinestroza, 2012).*

According to the interviewees, sustainable fashion was seen as a trend but is to be part of the mainstream of fashion. Even though the interviewees are working within the trend, the answers reflect an attempt to work at the micro-scale where macro-scale actions are needed. Sustainable fashion is viewed as an added competency and not as the main discourse of a fashion company.

## **2) Sustainable designers**

“The next industrial revolution has not been about returning to some idealized, preindustrial state in which, for example, all textiles are made from natural fibers” as per Jonathan Ive. As one of the many sustainable ways to meet the needs of consumers today, using only organic materials would not be possible.<sup>29</sup> The demand would be too high, and resources would be depleted. For this reason, sustainable designers look at other possibilities to find and utilize ready-made materials and textiles. They believe in upcycling<sup>30</sup> instead of using new materials, “closing the loop,” thus everything is recycled endlessly into new products and packaging or making sense of creating unnecessary collections for an overstocked industry.

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29 As there are many possibilities to create sustainable fashion as through organic fabrics (organic materials is one that has been mostly diffused), recycled materials, repurposing vintage clothes, artisan and fair trade social practices, tencel, zero waste design and processing technology.

30 Upcycling: Is sourcing waste material and using it to develop a new product or that of better quality, for example leftover fabric from the cutting floor, or from old clothes, is sustainable as the fabric is already made and is just being put to re-use, rather than finding its way to landfills KOUNTIOU, C. Thinking Out of the Box for Sustainable Fashion Design. 8ISS Symposium-Panel on Environment and Sustainability, 2011. 8ISS Symposium-Panel on Environment and Sustainability, 20:60 HINESTROZA, J. P. April 3 2012. RE: Education, Science, Nanotechnology & Design. Type to OBREGÓN, C.

*[...] cradle to cradle the concept is quite clear. I like the idea that it is doable, I can do it now and have an instant effect, it is about time to see how we design things, it's how to be intelligent, its is our responsibility as the producers (Wendelboe, 2011).*

*We need to steer cradle to cradle projects, direct them with tough moral questions (Fletcher, 2011).*

Even though design plays an integral role in “greening” the fashion industry by working with processes as Cradle-to-Cradle, slow fashion, the emphasis usually is based on materials, and the tough moral questions are not being addressed.

*The most serious adaptation in fashion has been by independent designers. They have the ability to efficiently and comprehensively adopt sustainable practices, while century-old companies approach sustainable fashion in large part from a marketing standpoint. The natural resources that sustain us are under threat, and so is our way of life. Such a great challenge must be met with great determination, creativity and vigor (Fletcher, 2011).*

New solutions lie within an entrepreneurial spirit, where the most interesting things happen continuously.

*I work the human side... developing new products takes time, little by little I work with my producers and enable the manufacturing to develop slowly (Fernandez, 2011)*

*[...] an entrepreneurial spirit brings new solutions; being very resourceful and creative...(Allen, 2011)*

*We only use fabrics that are to be pre-purposed. We are now developing partnerships with Japanese farmers who grow organic cotton by purchasing during the gap years when the cotton is yet to be ready for production (Oksala, 2011).*



Clutch bags made from recycled banners at Globe Hope headquarters in Nummela, Finland Obregón, C., 2011. Nummela. Globe Hope Headquarters: Accessories. [photograph].

A new collaborative paradigm can have a game-changing impact on the families of this region. Moreover by producing locally and believing in the domestic system, designers are excited to keep jobs at home and not have them go overseas. They are looking towards preserving traditional manufacturing skills. Another aspect is how CSR practices also center their design process as fair wages and fair compensation where healthy work practices are implemented.

*A designer can minimize the number of processes with fewer materials and less human energy (Risänen, 2012).*



Dresses made from recycled parachutes at Globe Hope headquarters in Nummela, Finland. Obregón, C., 2011. Nummela. Globe Hope Headquarters: *Parachute dresses*. [photograph].



Conscious passion for design from a humanity-based viewpoint drives the designers interviewed. Another aspect is how retaining cultural diversity and rescuing endangered artisanal practices, through tradition and transparency is at the center of their design ethos.

In particular, integration of a more holistic process throughout the whole supply chain is seldom found. A misperception is often the case within sustainable fashion, where processes still rely on past industrial ideas. An aspect found with how sustainable designers address their practice is how they share sustainable processes with others who are considering and questioning their own practices. Consequently they are flexible and work with materials they might have on hand, creating the collections without a concrete plan.

### **3) The fashion business**

*My big concern at the moment is that sustainability has been turned into a commodity by big brands - and traded like another commodity - because that's what big brands do, absorb it into its business model. And then they think they have acted sufficiently. When of course this is an illusion (Fletcher, 2012).*

*It's not possible to get the whole fashion textiles production to be environmentally sound, it's so complicated...(Risänen, 2012)*

*[...] the global generation is aware that a Gap tee-shirt might have been produced in Vietnam and was designed in California, we are connected, but how we can make sure this connection is sustainable (Hinestroza, 2012)?*

*[...] the problems in the fashion field are many and complex, the overall understanding is still on surface level...(Niinimäki, 2011)*

*Multinational corporations have century-old practices, 'business as usual', as they say. It will take resources and time to change industrial production processes into sustainable ones (Allen, 2011).*

*Meanwhile one-hundred-year-old companies, such as Macy's or Levi's, must learn and be informed about how to become sustainable. Water is scarce, and climate change is a reality (Allen, 2011).*

The complexities of the fashion industry are many and vast. To pinpoint the one cause of the industries harmful actions would be impossible to achieve. The overall sentiment among the designers interviewed is the need for big brands to take a deep look at their practices. They need not only to implement corporate social responsibility but also to use organic cotton and other sustainable practices, although these shifts within seem superficial and interviewees said that they do not address the core problems within the industry.

#### **4) The role of designers and consumers**

*As a designer I look holistically through the design chain, what is the value to the customer, new ways to improve upon the value... specifically help my clients use better materials by re-inventing the functionality of the product improving the whole process (Allen, 2011).*

*The consumer has to be reeducated not to buy anything made from new materials... change the word fashion, it already gives the item an expiration date, means one time usage, creating more of a market of wants. Also it has to be affordable (Helle, 2011).*

In order to create a new paradigm, the consumer has to be reeducated to not buy anything made from new materials. If consumers learn to buy affordable eco-design products a change may be reached within twenty to thirty years.

*[...] people don't know where sustainability is, how it happens, or how choices will affect the rest of the ecosystem. It is not easy to be a savvy consumer (Allen, 2011).*

*[...] designers should see their skills differently. To look for opportunities to design by facilitating change or design by educating people rather than just using design skills to create more products. But if they do want to do that, then there are many challenges associated with working in a big company that you philosophically you don't agree with... (Fletcher, 2012)*

*Clothing, food, and shelter are a human necessity. The challenge is not the quantity; the challenge is that a small percentage of people from the developed world, approximately 20%, consume a majority of the world's goods, approximately 80%. Consuming is not done equitably (Allen, 2011).*

*[...] a third era is happening, where consumers are more in tune with what they buy, why they buy it, and from whom (Oksala, 2011).*

There is an opportunity for designers to work sustainably, since the demand is there. Common questions raised by consumers have to do with how to compare one green garment with another. An overwhelming amount of information creates confused consumers. While they understand inferior quality, they can't differentiate between buying 'organic,' 'local,' 'fair trade,' 'fair wear,' or 'low carbon footprint.' Consumers do not see the life cycle assessment of a product, this aspect could be embedded and create a more transparent garment. Moreover garments with longevity and value give relationship of belonging for the customer.

#### **4) Change of paradigm**

*The first era in production was industrialization, the second era was the failing and collapse of the industrialization and we are now going back to our old practices and traditional processes. We see the world is going toward a third era leaving where people are more in tune of what they buy, why the buy it and from whom, a new paradigm has started (Oksala, 2011).*

*“Clothing, food, and shelter are a human necessity. The challenge is that a small percentage of people from the developed world, approximately 20% consume a majority of the world's goods..”*  
*Natalia Allen*



Free market where people swap clothes or home accessories in the Cable Factory. Obregón, C., 2011. Helsinki. *The Recycling Factory: Free of Charge*. [photograph].

*Teach the consumer to buy eco and in twenty to thirty years maybe after that we will see a change of paradigm (Helle, 2011).*

*The time is now to treat a profitable market with Nanotechnology a change of paradigm is to happen when industrial processes become more efficient and sustainable, it will happen (Hinestroza, 2012)!*

*I understand the humanity of wanting to make money, but not on the backs of the people in China or India. Collaboration is key; not lack of knowledge. Change the relationship with sustainable living. It may be urban robotics or engineering of apparel for each customer. At the end of the day, it's making clothes. The importance is in how to apply design talent, aspiring to do the best, and create a major shift (Allen, 2011)*

Largely, the quest of this thesis was to find a common thread, which could reveal the actions, needed to bring about a social paradigm. According to the trends exposed, a shared view of taking back-lost traditions and industrial-manufacturing practices was meant to directly benefit communities and their people.

## 5) Fashion education

*[...] workshop flora is responsible for developing educational strategies for the design team as well as fostering workshops for the manufacturing team, which are mostly indigenous women (Fernandez, 2011).*



The weaving process represents the cycle of life and death.  
Fernández, C. 2006. Mexico: *Triqui Huipil*. [photograph] (Taller Flora Book).

*Young fashion design graduates are lacking a proper sustainable fashion education, absolutely (Fletcher, 2012)!*

*Young fashion students see sustainable fashion as a 'serious' and optional set of choices to make within the structures of their current practice largely around materials and production. They fail to see that it is a different way of thinking (Fletcher, 2011).*

*I do believe that sustainable design will anyway be one of the main focus areas at the university (in teaching and in research) so it also has to enter in fashion teaching...(Oksala, 2011)*

For young fashion designers, it seems the only way to adapt to the market is to design for a traditional fashion house or company. To start a collection is not only very difficult but it also adds more products to an already overstocked industry. On this note, Fletcher laments: Designers seeing their skills differently can constitute a catch-22 for



Collaborative sewing clubs at The Recycling Factory participants make their own garments from recycled clothes.

Obregón, C., 2011. Helsinki. *The Recycling Factory: Sewing Clubs*. [photograph]

those who want to change things. Consequently design should be for educating people, rather than using design skills to create more products. Sustainable designers interviewed for this thesis agreed on the value of teaching young fashion designers from the beginning about initiatives and practices that can green the future of the entire industry. Most are self-taught in the field and did not have training in sustainable practices from their educational institutions.







# 7

## Discussions

### 7.1 Educational Paradigm

Students of design, given the opportunity to comprehend the full process of creating, marketing, discarding clothing, and consumerism, will be in a stronger position to build best practices into the departments and companies they will work for in the future. Designers and design educators should and can answer to the problématique since their creative knowledge may carry many innovative answers unknown to other disciplines. Future educational initiatives should explore and examine different ideas from members in design, manufacturing, and non-profit organizations (Lee and Regni, 2009).

Fashion designers, as well as academics, agree in that a full curriculum should be created within sustainable fashion. The lack of current support by educational institutions is bound to adjust. The trend may be slowly shifting into a new paradigm; however it should become radically integrated into the regular fashion design curriculum.

Working within the realm of sustainability and creating a platform for fashion designers to come up with their own real solutions can be a manner to engage learners. First, the fashion program should include a compulsory course in 'Sustainable Fashion.' In this course, students will receive the background and up to date information on why sustainability is such an urgent concern.

The foundation course will pave the road for the more intrinsic and hands-on courses to follow. It has been suggested, "...design shapes our lives, and designers must consider the impact of this process - the

desired as well as the undesired” (Leerberg et al., 2010).<sup>31</sup> According to Leerberg (2010) design education should prepare students for the realities of the design profession, in turn understanding what happens outside of the classroom. One of the most important aspects is to create awareness of the effects of design, and the ability of the designer “...to influence the design process from an idea to an end product” (Leerberg et al., 2010). Sustainable fashion is viewed as an added competency, rather than as a core element within the different fashion education programs.

As noted by iPhone designer Jonathan Ive (2010), “for a designer to continually learn about materials is not extracurricular, it’s absolutely essential.” He continues by implying the necessity to continue working on the development of sustainable materials, in hopes of further educating and inspiring other designers who can contribute with their knowledge to ongoing research. By working with a multidisciplinary approach, product, textile, and fashion designers can benefit from practical learning and research, developing innovation within design.

## **7.2 Sustainable Fashion Paradigm**

To obtain a sustainable fashion paradigm, the trends outlined in this thesis demonstrate the need for essential processes to be adopted collectively. In fact, more and more fashion designers and businesses are adopting sustainable practices. These agents of change are implementing greener processes and taking notice of environmental issues, making progress at a local scale.

To grant a change in paradigm, all production processes, especially in countries like Bangladesh, Cambodia, and China, would have to transform radically towards a sustainable and ethical industry. Conceivably, following standardized international regulations and accepting serious penalties for misleading labeling could achieve more transparency and, hence, the lot of those at the bottom of the fashion pyramid might be improved. Addressing these problems the Nordic Fashion Association (NICE) in May 2012 for the sustainable fashion summit defined a code of conduct and manual for the fashion and textile industry. The manual delineates the following as where the industry’s

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31 For this reason, a responsible designer is characterized as someone, who questions the logic of our present consumer society, the effects of design and the product life cycle, who tests ideas, considering scenarios and alternatives by evaluating materials, manufacturing processes, form and functionality as well as consumer attachment and emotional value, and who uses this knowledge to set criteria for the design and to take a stance as a designer LEERBERG, M., RIISBERG, V. & BOUTRUP, J. 2010. Design responsibility and sustainable design as reflective practice: an educational challenge. *Sustainable Development*, 18, 306-317.

problems lie: human rights, labor, occupational health and safety, environment, ethical conduct, and monitoring and evaluation (NICE, 2012).

Consumer behavior is an area as impactful as that of the industrial processes. Max-Neef et al. (1991) combined two categories of needs, which he called existential and axiological. The author defined existential needs of Being, Having, Doing, and Interacting are combined with the axiological needs of Subsistence, Protection, Affection, Understanding, Participation, Idleness, Creation, Identity and Freedom. Many of those needs can be satisfied through human interaction, and not with products (Spangenberg et al., 2010). As defined by Spangenberg et al. "...sustainable consumption is about choosing true satisfiers, not about neglecting needs." Satisfiers from products are banal and end rapidly can be called pseudo-satisfiers (ibid.). Consumers are usually not taken into account within the design process, in order to create a systemic change, in textiles and the clothing industry, focusing on consumers' values and needs, providing better consumer satisfaction may lead towards more sustainable practices (Niinimäki and Hassi, 2011). Creating value across the border and enhancing productivity would make satisfied customers.

Therefore, a paradigm shift is one where less is more and "enoughism"<sup>32</sup> connects with new consumers. The main strategies shown here would be adopted, across the line, by the fashion world, from haute couture designers to mac-fashion, creating a deeper and broader sustainability business. A change of consciousness and responsibility would follow, which is when a paradigm shift, as defined by Kuhn, happens. There are commonalities in understanding how to ethically dye textiles by perhaps restructuring industrial processes with new waterless technology. Even today, the most 'sustainable' solutions have a negative impact on the planet. The world would be better off if most designed products were never produced (Shedroff and Lovins, 2009).

The Federal Trade Commission in the US introduced lightning labels to give consumers estimated yearly energy use. Clothing labels may copy a labeling trend for light bulbs or nutritional labels. Marks & Spencer introduced recycled clothing labels in 2011 that inform the customer of

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32 Enoughism: where consumers possess everything they need and buying more is a burden NAISH. J. 2009. Enough: Breaking Free from the World of Excess, Hodder Paperbacks.

benefits towards clothes donations with OXFAM (global movement of people working with others to overcome poverty and suffering, (Hims-worth, 2010). Every Timberland shoe carries a footprint label where customer's awareness is raised by information on the climate impact, chemicals used, and resource consumption of each product. Taking the labels to a greener level would include who made the garment, amount paid per day, and finally carbon footprint. (Appendix 5)

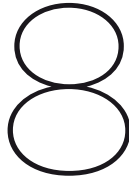
Sustainable fashion means to optimize, minimize, and directly involve the consumers in transparency and openness in making clothes. Then again, the bottom line is, "Does the world need more clothes in a new paradigm?"

There is a strong wish to have lasting, sustainable benefits for those who are participative actors in local fashion industries. Fostering social initiatives locally may change the way fashion is produced and bought. Within the search for local value independently minded consumers are looking for brands, which define the LATTE factor delivering Local, Authentic, Targeted, Transparent, and Ethical products (Censydiam, 2010).

Deep-rooted habits involving intermediaries overseas can increase the costs of production, therefore hurting the factory worker from the start of the process. Cutting out unnecessary intermediaries may bring the process to a level of transparency that directly empowers all stakeholders. In order for a paradigm change to happen within this context, it is necessary to understand all actors involved and at the end create a more ethical process. Local production creates monetary and ethical rewards all across the manufacturing process.

The global trade in second hand clothing is estimated to be at \$1 billion a year (Siegle, 2011). Developed countries old clothes are dumped in Africa. Consequently, second hand western garments replace traditional indigenous clothes. "No country has ever achieved a sustainable per capita national income, of a level associated with a developing economy, without also achieving a clothing manufacturing workforce that employs at least 1 per cent of the population. In order for a country to develop, it must have an indigenous clothing industry" (Siegle, 2011).

Where is consumer responsibility when garments cease to be fashionable? Can a paradigm shift within consumer behavior come with a label of commitment? Not only the designers or factory workers or a textile production processing plant is responsible, but consumers as well. The end-user and consumer affects the whole cycle dramatically. A chance to create a paradigm shift is created every day when saying no to yet another pair of jeans or another pair of boots. All consumers would have to acknowledge the need to create a change of consciousness in order for the new paradigm to arise.





# Conclusions

The Industrial Revolution contributed to the development of the fashion industry but also to its unsound and harmful environmental practices. In this period of transition, coming out of the industrial era into the digital one, sustainability has entered as a key to human survival in the twenty first century (Rajagopal, 2011). According to Fletcher (2008) business as usual can not continue, fashion as usual is not an option. An initial exploration of the critical impacts outlined within this thesis was meant to develop a deeper understanding of the fashion industry within a sustainability context. In order to build the argument, educators, academics, and a new generation of fashion designers, as sampled in this thesis, were shown to address the problems by creating a more responsible and greener industry.

A sustainable education within fashion design is a long process to complete. As of now, there is no single process or standardized solution. Sustainable fashion businesses have valuable knowledge, which when shared with students can create a synergy between all. Education will not change it all, but it is a start to create a smarter and cleaner fashionable planet. Design at the present moment has a task to contribute towards a sustainable society (Spangenberg et al., 2010). As an experienced fashion designer and from my research for this thesis, I believe there is a need to restructure the whole system through education on sustainability and not only to settle on special education for designers. Sustainability is taught in some primary schools, but as an added competency, as an extra curricular course. Why not make it central to a child's education from the very beginning and to the practices surrounding primary education? As far as focusing, a child's life in an environmentally friendly education would bring about a true paradigm shift.

"Current practices, experience and education are anchored in disciplines with a long history of development over the past half century" (Ing, 2010). My main conclusion in this thesis is that fashion design students should follow a nonlinear curriculum where sustainability the environment, business, social and ethical areas are studied in theory

and in practice. A designer can positively influence the mainstream business model (Fletcher and Grose, 2012) and become an agent of change if she has the knowledge to do so. Consequently, innovative design skills must be taught where designers may act as sustainable mediators that might combine the economic and environmental interests and understand the different stakeholders of the manufacturing and design process (Vezzoli and Manzini, 2008). In addition, it is crucial that students gain knowledge on eco-materials, eco-efficiency in production, ethical manufacturing, and consumer's relationships with products in the context of sustainable development (Niinimäki, 2011).

Albert Einstein wrote "the world will not evolve past its current state of crisis by using the same thinking that created the situation." Solutions incorporate 'eco-effectiveness' into the manufacturing system and implement the whole life-cycle process (Charter and Tischner, 2001).

In the context of a change from trend to paradigm, the areas touched on were selected for their innovative and creative clues, which would help others to navigate soundly within the concept of sustainable fashion. The purpose was to create a discussion among different stakeholders, finding a common discourse along the route from trend to paradigm. What would be the response to a new paradigm? What has commenced with a sense of urgency, as a trend seems to be pushing towards becoming part of a new and fundamental paradigm? Are stakeholders participating knowingly to achieve the change? Otherwise, does it come from participating in another lucrative fashion trend? As Hinestroza said in the interview, a change of paradigm occurs every fifty years within the scientific realm. Is the same bound to happen within the fashion industry?

To meet the demands and impacts of the fashion industry, I have concluded from this research that the work must start from an educational standpoint. Independent designers are working with traditional artisanal processes, developing materials themselves, and upcycling products, as well as introducing fewer collections and styles within a given year. They believe that fashion design education must incorporate sustainable principles; in order to work within the natural world and not further deplete the resources we have left. The designers interviewed are self-taught in this new field and did not receive any training in sustainable practices from their educational institutions. What has commenced with a sense of urgency, as a trend seems to be pushing towards becoming part of a new and fundamental paradigm. Are stakeholders participating knowingly to achieve the change? Otherwise, does it come from participating in another lucrative fashion trend? As Hinestroza said in the interview, a change of paradigm occurs every fifty years within the scientific realm. Is the same bound to happen within the fashion industry?



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Though some schools, like Parsons The New School for Design and University of Arts London Central Saint Martin's offer courses and master's programs which focus on environmental responsible practices there is not yet a complete sustainable fashion design curriculum at the bachelor's level. Sustainable education is still viewed as an added competency, instead of a core program within the different fashion institutions. The designers interviewed agreed that teaching future fashion designers from the start is what can green the future of the entire industry. The next generation of designers must learn the entire process of sustainability: from manufacturing and production to marketing, material, and to social ethical practices and consumer behavior patterns.

"Current practices, experience and education are anchored in disciplines with a long history of development over the past half century" (Ing, 2010). Conclusively fashion design students should follow a non-linear curriculum where sustainability the environment, business, social and ethical areas are studied in theory and in practice. A designer can positively influence the mainstream business model (Fletcher and Grose, 2012) and become an agent of change if she has the knowledge to do so.

Consequently, innovative design skills must be taught where designers may act as sustainable mediators that might combine the economic and environmental interests and understand the different stakeholders of the manufacturing and design process (Vezzoli and Manzini, 2008). In addition, it is crucial that students gain knowledge on eco-materials, eco-efficiency in production, ethical manufacturing, and consumer's relationships with products in the context of sustainable development (Niinimäki, 2011).

Another conclusion from this thesis is the significance of price within the whole fashion industry as one of the major barriers in reaching a new paradigm. The economic system inside the industry is driven by price. Moreover, materials are underpriced due to overproduction and

subsidies (Jonas Eder-Hansen et al., 2012). Therefore, if price barriers related to sustainable materials were to drop and compete with unsustainable fashion, consumers would have a greater incentive to purchase ethical clothing. In a new paradigm, price wars between the two factions disappear.

Another economic aspect is related to the resources available in poorer countries either as producers or consumers of fashion products. This question took me to think about the old and traditional technique of natural dyeing. As a result of my research, I found a new natural dye initiative with BioComercio Sostenible from Colombia to help understand one aspect of what it would mean to work under a new commercial paradigm of bio products. BioComercio Sostenible grew out of a direct response to Colombia's environmental impacts and follows its own sustainability guidelines according to supply and demand. Encountering the Colombian sustainability setting brought me to a thoughtful recognition of the difficulty of changing embedded trends, such as following the path of developed countries' production processes and consumer behavior. This led me to conclude that further research is needed to clarify the relationship between poverty and consumer behavior within the context of sustainable production patterns. There is little doubt that with a deeper and wider scope of studies, finding answers in understanding causes affecting human consumer behavior.

In the end, or from the beginning, the most eminent resolution to greening the industry is innovation, creativity, and education. The designer must make the difference and create a sustainable and holistic approach to fashion. Designers recognize the importance of connecting creativity with sustainability tools as essential elements of conscientious business activities, strategic corporate responsibility, and sustainable production practices. As covered, new technologies adopted by textile and fashion designers create not only a change of paradigm in how clothing is designed and produced, but also bring forth collaborative efforts between designers and scientists, bridging fashion education towards a creative path.

Authors McDonough and Braungart, in their manifesto *Cradle to Cradle* (2002), define designers as creators that can employ the intelligence of natural systems—the effectiveness of nutrient cycling, the abundance of the sun's energy—when they making products, industrial systems, and buildings, allowing nature and commerce to co-exist. As independent designers, we have the responsibility and opportunity to choose the fabrics, materials, and production processes, as well as the branding and selling of our products. It is in our hands to start a new industrial revolution. To close, I leave Anais Nin's (1958) pertinent quote: "And the day came when the risk to remain tight in a bud was more painful than the risk it took to blossom."

## 8.2 Future research

Taking into consideration the topic I would like to continue to do a more extensive inquiry and possibly place it within Colombia where I see many interesting approaches to sustainable fashion arising. Consequently, new questions arrived and more answers need to be formulated. The following questions indicate possible and necessary research paths: Can the fashion design business be enhanced to make it more effective and sustainable or does a complete and radical change need to occur for sustainability to be possible? How can international policies be standardized worldwide? Is there any other way to change habits and processes other than by monetary incentive? How can higher education students relate to the impacts of fashion's industrial processes? How can academics influence future green industrial processes?

Future case studies could be focused within emerging markets compared to mature ones, where more advanced sustainable initiatives are to be found. In emerging markets sustainable fashion is happening on a local, smaller scale with a more intuitive approach, which has an interesting effect to the whole industry. Moreover, an action research study would be optimistic for obtaining accurate results.

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*“And the day came when the risk to remain tight in a bud was more painful than the risk it took to blossom.”*  
*Anais Nin*



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# Appendices



## Appendix 1

Sustainable fashion syllabus

Based on the research I created a sustainable fashion syllabus as a university course addressing some of the issues and ideas presented in the thesis.

<p><b>SF100</b> <i>Fundamentals Of Sustainable Fashion</i></p>	<p>Instructor: Carolina Obregón E-Mail: c.obregon@aalto.fi Phone: +358.444.4444 Fall: MT 10:00-12:00 Office Hours: 13.00-15.00</p>
<p><b>OVERVIEW</b> This course surveys Sustainable Fashion terminology and properties to enable students to make appropriate choices to design a sustainable fashion project. The course combines theory and design perspectives to issues of sustainability.</p> <p>The course uses PBL-methodology (Problem-Based-Learning), which is supported by theme lectures. The students will be working in teams with case studies and design tasks. Project work includes several stages such as: research, insight, ideation, concept creation and prototyping.</p> <p>A journal-learning diary/blog will also be requested as part of the final grade.</p>	<p><b>REQUIRED TEXTBOOKS</b></p> <p>FLETCHER, K. 2008. Sustainable fashion and textiles : design journeys</p> <p>FLETCHER, K. &amp; GROSE, L. 2012. Fashion and Sustainability: Design for Change</p> <p>CHARTER, M. &amp; TISCHNER, U. 2001. Sustainable solutions: developing products and services for the future.</p> <p>NIINIMÄKI, K. 2011. From Disposable to Sustainable. The Complex Interplay between Design and Consumption of Textiles and Clothing. Doctoral Degree Dissertation, Aalto University</p>

<p><b>LEARNING OBJECTIVES</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Identify major issues in the fashion industry</li> <li>• Identify the four pillars in sustainability: cultural, economic, environmental, and social responsibility</li> <li>• Identify and envision new possibilities to design and implement sustainable fashion</li> <li>• Manufacturing processes: e.g. Life Cycle Assessment (LCA), Cradle to Cradle (C2C)</li> <li>• Identify a variety of sustainable materials (textiles and other materials pertaining to garment construction)</li> <li>• Identify regulations and laws that apply to sustainable fashion</li> </ul> <p>Students will demonstrate the ability to distinguish between a holistic 100% sustainable fashion, sustainable garments and processes, Corporate Social Responsibility</p> <p>Students will demonstrate an ability to discern and judge materials, processes, distribution, consumer care and disposal Requirements</p> <p>This is a Master's level course is particularly well suited for students of fashion and textile design, or any motivated students from other disciplines are also welcome.</p>	<p><b>SUGGESTED READING</b></p> <p>BLACK, S. 2008. Eco-chic: The Fashion Paradox</p> <p>SIEGLE, L. 2011. To Die for: Is Fashion Wearing Out the World?</p> <p>MEADOWS, D. H., RANDERS, J. &amp; MEADOWS, D. L. 2005. Sustainable solutions: developing products and services for the future. Limits to Growth: The 30-Year Update</p> <p><b>WEBSITES</b></p> <p><a href="http://www.ethicalfashionforum.com/">http://www.ethicalfashionforum.com/</a> <a href="http://www.ecouterre.com/">http://www.ecouterre.com/</a>  <a href="http://www.betterthinking.co.uk/">http://www.betterthinking.co.uk/</a>  <a href="http://blog.tedresearch.net/">http://blog.tedresearch.net/</a></p>										
<p><b>EVALUATION</b></p> <table> <tr> <td>Assignments</td> <td>25%</td> </tr> <tr> <td>Group Work</td> <td>25%</td> </tr> <tr> <td>Journal and Final</td> <td>40%</td> </tr> <tr> <td>Attendance</td> <td>10%</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>100%</b></td> </tr> </table> <p>Grading Criteria (%):  Numbered grades 100-59  Letter grades A-F</p>	Assignments	25%	Group Work	25%	Journal and Final	40%	Attendance	10%	<b>TOTAL</b>	<b>100%</b>	
Assignments	25%										
Group Work	25%										
Journal and Final	40%										
Attendance	10%										
<b>TOTAL</b>	<b>100%</b>										

## **Week 1**

Introduction: Syllabus

Lecture:

- Intro to sustainable fashion
- Principles of sustainable fashion
- Definitions
- Issues and problems in the fashion industry
- Solutions

Lab: What is sustainable fashion for you, why do you think it is a simple or difficult process

Begin blog-learning diary (open account on suggested website word-press.com). Include definitions of sustainability and sustainable fashion

## **Week 2**

Discuss definitions

Lecture: Sustainable systems

Lab: Identify new systems bring to class findings

Documentary: China Blue- a documentary about a sweat shop workers at a denim factory by Micha Peled /SFC

## **Week 3**

Lecture: Sustainable systems

Discuss definitions

Lab: Identify new systems bring to class findings

## **Week 4**

Lecture: Labeling and introduction to sustainable practices

Lab: Identify labels in your country and discuss special requirements, pros and cons

Assign project and groups

## **Week 5**

Field trip to sustainable fashion designers store and/or manufacturing facility

## **Week 6**

Lab: Midterm group project

Assignment #3 Midterm group project

Create a virtual digital collection of garments for your group's assigned system. Create a board presentation with your group that uses

the system and use all appropriate literature, definitions and language. Assignment is to be completed in/out class use of lab is advised

**ASSIGNMENT WILL BE COLLECTED FOR WEEK 8**

Objectives:

Identify sustainable design processes and compare with a non-sustainable fashion collection. Compare and contrast. Students will demonstrate the ability to distinguish between a classical made fashion collection and a sustainable fashion collection.

**ASSESSMENT:**

	POINT VALUE	POINTS EARNED
CONTENT	50	
VISUAL PRESENTATION	20	
THEORY (AND APPLICATION)	10	
CRITICAL THINKING	10	
TECHNICAL SKILLS	10	
COMPUTER USE		

**Week 7**

Lecture: Consumer behavior  
Lab: Consumer care and disposal

**Week 8**

Presentations: Group midterm projects  
Sustainability journal due for grading during class time  
Week 3  
Lecture: Sustainable systems  
Discuss definitions  
Lab: Identify new systems bring to class findings

**Week 9**

Lecture: Sustainable trends in fashion  
Lab: Research new processes in your community  
Lab: How can I implement my findings?

**Week 10**

Lecture: Identifying new consumer and co-design applications  
Review:  
Final Lab: Work on journals  
Journal assignment: Sustainability journals due week 11

**Week 11**

Journals due for final grading  
Assignment #7 final journal







## Appendix 2

Appendix 2, 3, and 4 are interview transcripts I conducted and are used as a primary source of information. The appendixes are divided by the work the interviewees perform in sustainable fashion .

*“The next industrial revolution as not being about returning to some idealized, preindustrial state in which, for example, all textiles are made from natural fibers” as per Jonathan Ive. As one of the many sustainable ways to meet the needs of consumers today, using only organic materials would not be possible.<sup>33</sup> The demand would be too high, and resources would be depleted. For this reason, independent designers look at other possibilities to find and utilize ready-made materials and textiles. They believe in upcycling<sup>34</sup> instead of using new materials, “closing the loop,” thus everything is recycled endlessly into new products and packaging or making sense of creating unnecessary collections for an overstocked industry.*

**NATALIA ALLEN:** Ecological Fashion Consultancy

Natalia Allen’s Allen created Design Futurist, a New York design consultancy firm, where specific ecological goals are being achieved within multinational brands such as DuPont, DKNY, Calvin Klein, and

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33 There are many possibilities to create sustainable fashion as through organic fabrics (organic materials is one that has been mostly diffused), recycled materials, repurposing vintage clothes, artisan and fair trade social practices, tencel, zero waste design and processing technology.<sup>98</sup> FASHION, C. F. S. 2012a. Research projects [Online]. London: London College of Fashion. Available: <http://www.sustainable-fashion.com/challenging-what-we-know/2012>].

34 Upcycling: sourcing waste material and using it to develop a new product or one of better quality, for example leftover fabric from the cutting floor, or from old clothes, is sustainable as the fabric is already made and is just being put to re-use, rather than finding its way to landfills KOUNTIOU, C. Thinking Out of the Box for Sustainable Fashion Design. 8ISS Symposium-Panel on Environment and Sustainability, 2011. 8ISS Symposium-Panel on Environment and Sustainability, 20.

Phillips. Allen gives credit to companies, employees, and individual designers who are willing to work with sustainable, new, and exciting products. The ecological fashion consultancy firm falls under several categories: sustainable design by implementing: green production processes, use of organic materials such as hemp or adding value for consumers by improving quality standards. Allen looks at the design chain holistically: she begins with what is of value to the customer and incorporates improvements upon the value. She helps her clients use nontoxic materials from superior fibers, which improves performance and is cost-competitive and advantageous for business.

I am very excited about your work because I have gone through a parallel conversion: I studied at Parsons, created my own design products, worked with several important designers, and then gradually became frustrated and disgusted with the practices and ethics of this business. This is why I am rethinking my work and studying again after many years of experience in all aspects of fashion design and production. I am so glad to have found this university and inspiring designers like you!

### **1. WHY AND WHEN DID YOU BEGIN TO RETHINK FASHION AND MOVE TOWARDS WORKING AS A SUSTAINABLE DESIGNER?**

N.A. I was hired to develop fashion in technology, new manufacturing innovative scope of work. With the client I would develop an interesting textile, really exciting clothing research. I learned the components, which could be highly toxic to human body. Then I started asking questions like how does it impact our health and our environment.

### **2. FOR YOUNG FASHION DESIGNERS IT SEEMS THAT THE ONLY WAY TO ADAPT TO THE MARKET IS TO DESIGN FOR A TRADITIONAL UNSUSTAINABLE FASHION HOUSE OR COMPANY. TO START YOUR OWN COLLECTION IS NOT ONLY VERY DIFFICULT BUT AT THE SAME TIME YOU MAY JUST BE ADDING MORE PRODUCTS TO AN ALREADY OVERSTOCKED INDUSTRY. IS THIS A CATCH 22 FOR DESIGNERS WHO WANT TO CHANGE THINGS? HOW DID YOU DEAL WITH THIS ISSUE IN YOUR OWN WORK: TO BE SUSTAINABLE WITHOUT CONTRIBUTING TO THE PROBLEM?**

N.A. One thing clothing food, clothing and shelter are a human necessity; the challenge is the quantities we consume. A small percentage of nations are the highest percentage of consumers, it's not equitable.

### **3. HOW CAN INDEPENDENT DESIGNERS CHANGE 100 YEARS OLD INDUSTRIAL PROCESSES AND PRACTICES?**

N.A. Just do it! There is no specific recipe. It is admirable the entrepreneurial spirit of independent designers, always thinking of new solutions. This is where you see the most interesting things happening

by entrepreneurial leaps. With big resources there is less of an incentive, as long as business is growing, nothing will change. Independent designers might start something from scratch, thinking about the best ways to produce the product, as well as being very resourceful.

#### **4. HOW DID YOUR WORK MAKE BIG PLAYERS AS CALVIN KLEIN, DKNY, AND DUPONT MORE SUSTAINABLE?**

N.A. Well I have to give credit to the companies, the body of people, the individual's designers with sustainable ideas, the new exciting products. Various products that I have developed was to look holistically through the design chain, what is the value to the customer, and the new ways to improve upon the value, specifically help my clients use better materials. As synthetic over toxic by its performance, show them the better fibers are cost competitive. Consequently are better for our business. Designers have creativity and innovative unique process thinking for reinventing the functionality of the product by improving it at the end.

#### **5. HOW OPEN ARE THE BIG FASHION COMPANIES AND LONG TIME FASHION DESIGNERS ACCEPTING THE SUSTAINABILITY MOVEMENT? ARE THEY REALLY CHANGING OR ARE THEY GREENING FASHION BECAUSE OF A TREND?**

N.A. I think it there are most serious adaption in fashion is by the independent designers. They have capabilities and are really efficient. The larger companies, what they think in 20 years moving to organic to whatever cause programs donating clothes in the new world, all these projects are happening. Using recyclable plastic bottles to then put on your body, which can be toxic, we may look at it as sustainable but were are not seeing the whole picture. Distil this down; companies are getting into the realm of sustainable marketing. Independent designers have better capability to starting sustainable companies. Now water is scarce, where we have climate change but 100 years of industrialization is hard to transform.

#### **6. HOW CAN DESIGNERS CHANGE THE FASHION CYCLES OF CONSUMERS? THE MARKET NEEDS TO PUT OUT FOUR COLLECTIONS A YEAR? CAN WE CHANGE THIS FAST CYCLE?**

N.A. Your need to show the customer that but if they need the customer, the king! People can be informed inform by legislation fundamentally about how a fiber as hemp can be a sustainable resource. In the US we have to import cotton and there is political interest, since it is subsidized and many lobbyists support this. It's all a short-term market instead of seeing for the long run.

#### **7. HOW CAN WE REEDUCATE THE CONSUMER THAT TAUGHT TO**

## **BUY CONTINUOUSLY?**

N.A. I think conservative history should show us something: the entire culture around consuming was developed intentionally for people to want things in a span of 50 years. The shift was made towards making products disposable. Before products lasted, a shift in the US to wanting to know the products longevity. People are confused while they understand inferior quality, they do not know what to buy if organic, local, fair trade, and so many options. Many disingenuous ones as we have now green washing. It is not going to be easy to be savvy consumer. Not to externalize my own journey if I am honest with that the best things that a company can offer are allowing them to get educated. Abraham Lincoln said 'You can fool some of the people all of the time, and all of the people some of the time, but you can not fool all of the people all of the time'. Who is doing something; we can provide how we can work together providing valuable sustaining information.

## **8. WHAT STEPS NEEDS TO BE TAKEN TOWARDS CREATING A NEW PARADIGM IN THE FASHION INDUSTRY FOR IT TO BECOME TRULY SUSTAINABLE?**

N.A. We need a generation of people who understand the challenge. Understand the humanity, who wants to make money but not on the backs of the people in collaboration. It's not a lack of knowledge, the demand is there to supply for organic. Really this generation needs to change that relationship, it maybe urban robotics, different scenarios shift of values. Inspiring the leaders, the early adapters who work with the momentum. How can I apply my design ability aspiring to do our best and create shift of paradigm.

## **9. I AM AN OPTIMIST AND I THINK THAT YOU ARE TOO, BUT ALL THE FACTS TELL US OF A GLOOMY BLEAK FUTURE IF WE DO NOT ACT RIGHT NOW. ARE THE STEPS BEING TAKEN WITHIN THE INDUSTRY ENOUGH? IS THERE ANYTHING MORE RADICAL THAT COULD BE DONE RIGHT NOW THAT WOULD MAKE MORE OF A DIFFERENCE?**

N.A. I do not think that what we are taking sincere efforts. I don't see serious steady consistent shifts by some of the biggest apparel companies. I don't know how to make them systemically shift. We have to hit a wall, that is my concern, that we have opportunity for completion of entrepreneurship training.

An unpainted world what the real issues are, what are our responsibilities? New small group of eco designers still are outliers. Eco fashionistas who care of its glamour, they do not understand and most are uninformed. Probably looking at Vogue, only at the end products. The global fashion supply chain, thus successful, eco-chic, eco-fashion week, its kind small independent lines, its not fully embedded, its unfortunate, Predict how you have big changes, it takes a lot of work. I don't have much empathy of the scene in New York, although it makes some waves it really doesn't get to the bottom of the real problem. As Jorge Santana 'those who cannot remember the past are condemned to repeat it.'

#### **MATILDA WENDELBOE:** Cradle to Cradle Fashion

Annika Matilda Wendelboe is working on a Cradle to Cradle<sup>35</sup> process, where the customer brings back a garment after five to six years of use. Her collections are made with organic wools and cottons, which can be reused many times. Wendelboe garments are either composted or recycled when they reach their end of life. The garment can be repaired, the silhouette changed, or a new detail can be added. Her pieces can also be worn in different configurations.

Wendelboe works within an ecosystem in which the concept is to not add more. Her collections are created in a "closed loop" system, meaning that the garment goes back into the cycle and is not poisonous from the start, nor becomes waste at the end (Line, 2011).<sup>100</sup>

### **1. YOU ARE COMMITTED TO MAKE FASHION SUSTAINABLE HOW ARE YOU DOING THIS? WHY?**

M.W. My passion is fashion; I thought how could I not add waste to the world, my gift is to make fashion. When I found Cradle to Cradle; I was

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35 Cradle-to-cradle design defines a framework for designing products and industrial processes that turn materials into nutrients by enabling their perpetual flow within one of two distinct metabolisms: the biological metabolism and the technical metabolism. BRAUNGART, M., MCDONOUGH, W. & BOLLINGER, A. 2007. Cradle-to-cradle design: creating healthy emissions - a strategy for eco-effective product and system design. *Journal of Cleaner Production*, 15, 1348-1348.

doing only clothing with organic fabrics. But then I could do something being good. My goddaughter said it would be better to not exist, but it is not about that. Cradle to cradle as a concept is quite clear. It is a total change of mindset, change of paradigm.

I like the idea that it is doable, I can do it now and have an instant effect, it is about time to see how we design things, its how to be intelligent, its is our responsibility as the producers. The consumer has too much information. They do not have the time to do the research or want to do it at all. I use Cradle to Cradle certified fabrics although the collection is not certified. Although a small business it is possible to complete it for my customers who trust me to deliver good things. People are use to consuming and we are in a hurry to change the direction, reducing and minimizing. Although this shame blame is not inspiring. One important factor it needs to be fun, we are playing creatures and that is an important of all of this sustainability.

**2. IT SEEMS THAT THE ONLY WAY TO ADAPT INTO THE MARKET IS TO CONTINUE DESIGNING FOR A FASHION HOUSE, COMPANY ETC. UNLESS YOU CAN START YOUR OWN COLLECTION WHICH THEN YOU ARE ADDING TO MORE PRODUCTS TO AN ALREADY OVERSTOCKED INDUSTRY. DO YOU FEEL THAT WE AS DESIGNERS WANT TO CHANGE THINGS BUT YOU ARE GOING AGAINST THE FLOW, IT IS A "CATCH 22". HOW CAN WE CHANGE 100 YEARS OLD INDUSTRIAL PROCESSES AND PRACTICES?**

M.W. It is important just do it, simple but stupid, to show the examples, first show the idea. In Sweden, H&M is very interested talking about this a lot. I think it will move quite fast since prices are growing, we don't want chemicals on the body, or dirty processes. The bigger company's idea as renting or leasing clothes creating a take back system. You can pay a little extra for the fabric; you buy back and take back. Create a system that would have no waste, melt the clothing and make another garment. The customer will come back, you must take it to the extreme. Everything should be clean. You can consume, but with this in mind it could be intriguing how the world could change.

For me as a designer what I need are organic fabrics, and it takes a lot of detective work. Looking for threads, zippers, trimmings, it is coming along. But it takes a long time. Fashion was harder business in the past, now it is friendlier; peers are helpful, holistically sustainable.

**3. AS A FASHION DESIGNER HOW CAN WE CHANGE THE FASHION CYCLES OF PUTTING OUT 4 COLLECTIONS A YEAR? EDUCATING THE CONSUMER THAT WE HAVE TAUGHT THEM TO BUY CONTINUOUSLY?**

M.W. I put 2 collections a year. I have my own shop; I can produce fast or slow. The C2C fabrics are used for upholstery fabrics, before you could not find C2C fabrics. Designers as Stella McCartney, Nike, H&M,



are looking for these fashion fabrics.

**4. HOW OPEN ARE OTHER FASHION DESIGNERS ACCEPTING THE SUSTAINABILITY MOVEMENT IN SWEDEN? ARE THEY LISTENING OR ARE THEY GETTING TO BE GREEN FASHION BECAUSE OF A TREND?**

M.W. It's always hard to tell. Green washing happens. I think just do it with heart or wallet. It's become a more, natural part, organic fashion. People are aware of what they eat and what they wear. Mikhail Gorbachev said it takes only 5% to do a revolution. I think we are getting there. Coming from the economic crisis not sustainable the breakdown, and then try to be prepared to have another's solution. Positive hope is the most needed value. I feel it's my duty, makes me feel better and I don't want to create waste.

I know where my garments are going and where they came from. If all the details are worn and torn, you can repair it. Then buy the jacket back after 6 years, when it rips and fades. I can change a pocket, and create a new silhouette.

In the past, a person died and was buried with their valuable belongings. Now the cost of the T-shirt is nothing, who pays for it at the end you or the person who made it?

**5. HOW DO YOU SEE THE FASHION ETHICAL CONSUMER? IS IT GROWING AND PEOPLE ARE TRULY BECOMING MORE SUSTAINABLE CONSCIENTIOUS? OR HOW CAN WE EDUCATE THE CONSUMER?**

M.W. More people are asking for it, nobody buys a jacket because it is ethical. They buy cause it makes you look beautiful and feels good. The hard math its not essential, not for my business, I think that is the way it should be, its my job to produce good stuff. Why I did the cradle to cradle we need not education we need hope. Information is changing what is good and bad. The consumers are more aware the fashion magazines even though their angle has changed.

**6. WHAT STEPS NEEDS TO BE TAKEN TOWARDS CREATING A NEW "INDUSTRIAL REVOLUTION" IN THE FASHION INDUSTRY FOR IT TO BECOME TRULY SUSTAINABLE?**

M.W. It s up to us the producers responsibilities. It will help if we were running out of materials, painful for the poor countries, but I think it is necessary. Look forward to all the peaks, so slow to wake up, OK, we need to change the old system and we are pushing it. In Scandinavia we have the NICE organization and cooperating for the first time. Being the change and I think the change of paradigm is boiling under the surface, faster than we think.

**7. I AM AN OPTIMIST AND I THINK THAT YOU ARE TOO, BUT ALL**

**THE FACTS TELL US OF GLOOM BLEAK FUTURE IF WE DO NOT ACT RIGHT NOW. ARE THE STEPS BEING TAKEN WITHIN THE INDUSTRY ENOUGH OR ARE THEY TOO SMALL OF STEPS TO REALLY MAKE A DIFFERENCE?**

M.W. Too small, strangely believe they will be a big flood toward change can come so fast when you wake up, you see something We cant go back to just as before. I open my eyes I can close them to the change. When the volcano erupted, that shut Scandinavia down. We couldn't fly, made us aware of our vulnerability, a humbling experience. We look at local production how can we be more resilient to the changes. When I talk to people we need to face each other in corporation.

Green is not only about chemicals, you need to see the human aspect, that's is a key thing for the change. You don't have to be fully perfect and celebrate diversity it is a more holistic view. If you think of nature, the environment, it is trendy, that's is fine it is good for my business, it turned to PR, cause I can talk about it my designs, but this is a good way good surprise.

**GLOBE HOPE:** Ecology, Ethics and Aesthetics

Significant take back initiatives working with upcycling and recycling of materials seen at Globe Hope in Finland. Fletcher (2008) argues that "Localism represents an opportunity for major change; an opportunity to design distinctiveness within 50 miles." The Finnish eco-design brand, Globe Hope, upcycles materials, creating new lines of accessories and apparel. It works with manufacturing in Finland and might use the occasional Estonian factories.

Designer Seija Lukkala, who wanted out of the fast-paced environment and consumerist approach, founded Globe Hope in 2001. Lukkala applies her textile design to sustainable and ethical ways of developing a collection of bags and clothing made from military, hospital and workers uniforms, ad banners, flags, car seat belts, vintage and hospital textiles, and sails. Globe Hope's mantra is ecology, ethics and aesthetics (Globe, 2011).

Globe Hope's Nummela headquarters, 45 minutes from Helsinki, creates clothing and accessories by upcycling, reusing, and manufacturing. Maria Oskala, sales manager and PR director at Globe Hope answered the following questions:

### **1. HOW IS GLOBE HOPE WORKING SUSTAINABLY?**

M.O. We assess the carbon footprint by valuing local production. For example, the company developed a partnership with Japanese farmers who grow organic cotton locally. They purchase the cotton during the gap years when the cotton is yet to be ready for production.

### **2. HOW CAN WE REEDUCATE THE CONSUMER THAT TAUGHT TO BUY CONTINUOUSLY? HOW DO YOU SEE THE FASHION ETHICAL CONSUMER ARE PEOPLE TRULY BECOMING MORE SUSTAINABLE CONSCIENTIOUS OR IS IT A PASSING TREND?**

M.O. Our customers follow a LOHAS lifestyle (Lifestyles of Health and Sustainability). As a fashion business, Globe Hope distinguishes itself by creating a "need" for the customers, not a "want."

### **3. HOW ARE YOU DIFFERENT FROM OTHER ECO-COMPANIES IN FINLAND?**

M.O. As eco-pioneers in Finland, we do not believe in certifications, since the operation is transparent and there is an element of much-valued trust from our customers.

### **4. HOW CAN DESIGNERS CHANGE THE FASHION CYCLES OF CONSUMERS AND CHANGE FAST CYCLES?**

M.O. For us the collections are not planned in the manner of a traditional fashion company, since they are not based on market demand but rather we follow a "Zen Ethos," which means being flexible and working with whatever materials come to us when creating a collection. We believe in bringing to life what is at hand.

### **5. ARE YOU ADDING MORE PRODUCTS TO AN ALREADY**

**OVERSTOCKED INDUSTRY? HOW DID YOU DEAL WITH THIS ISSUE AT GLOBE HOPE? TO BE SUSTAINABLE WITHOUT CONTRIBUTING TO THE PROBLEM?**

M.O. We promote a new way of creating fashion without promoting over-consumption or using new materials. The first era was of industrialized production; the second era failed and saw the collapse of the industrialization process. Now, it is time to go back to old practices and traditional processes. A third era is happening, where consumers are more in tune with what they buy, why they buy it, and from whom.”

**6. WHAT STEPS NEEDS TO BE TAKEN TOWARDS CREATING A NEW PARADIGM IN THE FASHION INDUSTRY FOR IT TO BECOME TRULY SUSTAINABLE?**

M.O. We hope to be in the forefront of eco-design by promoting an overall sustainable lifestyle. As designers we expand the vision from a primary purpose of a product or system and consider the whole.

**THE RECYCLING FACTORY:** Non-profit organization

The Recycling Factory held in Helsinki, takes back clothes from consumers where they are ‘swapped’. The Recycling Factory is a new type of trade show held in Helsinki once a year since 2008. It markets and sells upcycled and recycled apparel and home accessories from Finnish eco-design companies and holds do-it-yourself recycling-themed workshops. The weekend event also features a very popular “free of charge market,” operating on the value of “bring and take,” in which people contribute their own undamaged clothes and other items and take anything they want from other donations.

**1. HOW DID THE IDEA OF CREATING THE RECYCLING FACTORY BORN?**

L.H. The idea was born from working at the cable factory where Spring-cleaning takes place at the beginning of the summer. Every office, art space throws away what they do not need into the recycling crates. The trash is not unusable; it is quite new and in perfect condition. People from other offices take things from the trash and use them.

**2. DO YOU HAVE TO HAVE SPECIAL PERMISSIONS TO HAVE THE EVENT? HAVE YOU HAD MANY DIFFICULTIES AMONGST THE WAY?**

L.H. The exhibitors work on a first come first serve basis and pay a fee of 225€-400€ for 2 days. The workshops bring their own working material. Eco design recycled materials companies. In Finland as them how many people, how much money is rolling in the business eco design making a living. The next idea is to create a roof organiza-

tion for designers to work with recycling, help new businesses in how to running, developing, coordinating a proper eco business. We would like to put out at least two events a year.

### **3. WHAT STEPS NEEDS TO BE TAKEN TOWARDS CREATING A NEW PARADIGM IN THE FASHION INDUSTRY FOR IT TO BECOME TRULY SUSTAINABLE IN YOUR PERSONAL POINT OF VIEW?**

L.H. The consumer has to be reeducated not to buy anything made from new materials. Teach the consumer to buy eco and in twenty to thirty years maybe after that we will see a change. Change the word fashion; it already gives the item an expiration date, means one time usage, creating more of a market of wants. Also it has to be affordable.

### **4. HOW ARE PEOPLE REACTING IN HELSINKI TO SUSTAINABILITY?**

L.H. People in Finland are showing more interest towards a sustainable living. We feel that we are really affecting the community. That is our main goal, people do come to the Recycling Factory there is a core interest, which they integrate, in their daily lifestyles.

### **5. WHAT IS THE GOAL FOR THE FUTURE AND CONTINUE TOWARDS WORKING WITHIN THIS CHANGE OF PARADIGM?**

L.H. Main goal of Cable Factory is to get the funding and spread other places, we can really start to change. Half of the exhibitors are coming from outside Helsinki, from social networking, and word of mouth from 20 to 30 companies that did not fit in before.

#### **CARLA FERNANDEZ:** Slow local fashion

Major concerns for sustainable fashion designers rest upon ethical questions regarding working conditions. Local social fashion initiatives are springing up from those wanting to make a difference in their communities, from creating clothes swapping events to working with artisanal techniques and involving indigenous groups in active design participation.

Though Carla Fernandez does not label her work as sustainable or ecological, she represents an important sector of new designers who are concerned with the social aspect of the fashion business and who have a sincere interest in retaining cultural diversity and rescuing endangered artisanal practices, through tradition and transparency. Fernandez, from Mexico City, uses “rebozos,” traditional artisanal shawls, as a staple piece in her women’s collections. The rebozo tradition goes back almost 500 years and is still used by many Mexican women as an accessory worn over the shoulders. The rebozo, made all over Mexico, is rectangular and can be made of cotton, wool or silk. Fernandez took

this tradition and created a new vernacular, empowering the people of the community who make the rebozos. She also advocates a slow process and locally developed fashion.

### **1. WHY DID YOU START WORKING WITH FASHION AND SUSTAINABLE COMMUNITIES?**

C.F. As an art historian I have researched artisanal and indigenous textiles and patternmaking processes. For me it was the love for a natural work ethos using traditional manufacturing processes. With the communities we exchange knowledge, it's collaboration and win win experience. It is the human aspect that matters to me. I give opportunities to women who understand that by teaching or learning their traditional craft, they can avoid getting involved with any part of the narcotics trade.

### **2. WHAT ARE THE PROCESSES THAT MAKE SUSTAINABLE INCLUDED IN YOUR COLLECTIONS: FABRICS, MATERIALS, MANUFACTURING, AND PRODUCTION?**

C.F. I taught them how to commercialize and market the products, while they instructed me in how to design within the traditional indigenous process. I use the same type of artisanal work for embroidery, adornments, and garment construction for all my collections.

### **3. HOW DO YOU SEE IN MEXICO SUSTAINABLE CONSUMER? YES THERE IS A GENERAL INTEREST? THE CONSUMER UNDERSTANDS WHAT IS ECO FASHION?**

C.F. I am well aware of the importance of the United States for Mexican trade and I hold workshops with Taller Flora with my business collaborators. I work with the communities to be competitive and work sustainably. Mexico, USA are together, but we compete and therefore you must work between both worlds.

### **4. DO YOU THINK YOU HAVE A POSITIVE FUTURE IN MEXICO AND THE MEXICAN CONSUMER IS PREPARED TO UNDERSTAND THE ECO FASHION?**

C.F. For me the women I work with come first. The sustainability comes second as I work with humanity of being eco. I give better opportunities and we develop new products, which help them stay out of narcotic trafficking.

I have worked with other as alliances with FONART and FUNDAMEX. I am writing a book for other designers where they can follow my concepts and idea with artisanal processes. There is a lot of interest since our diverse culture makes us unique. We work with innovation and quality, where the consumer is looking for something different, not through calling ourselves sustainable fashion or eco fashion.







## **Appendix 3**

Interview with **KATE FLETCHER**

Within the world of sustainable fashion and academics, Kate Fletcher is one of the most recognized authors. Fletcher is founder of the Slow Fashion movement, author of *Sustainable fashion and textiles: design journeys*, and works as a consultant for companies, non-governmental organizations, and educational institutions. Fletcher's knowledge and commitment to design education and sustainability made her a most desirable interview subject.

### **1. FROM WHEN YOU PUBLISHED YOUR BOOK IN 2008, "SUSTAINABLE FASHION AND TEXTILES: DESIGN JOURNEYS," WHERE HAVE YOU SEEN MAJOR POSITIVE OR NEGATIVE CHANGES IN FASHION IN THE PAST 4 YEARS? IN YOUR VIEW IS IT WORKING?**

K.F. Certainly over the last four years ideas of environmental responsibility have been rolled out across the industry more generally whereas before it was siloed very separately. Today still it is separate to business in that it is an 'add on' rather than an essential part of business. I would say that except for the leading proponents of CSR, sustainability is pursued as a reactive device to deflect criticism. In other places by contrast it is being used to leverage social value, which brings economic value. Though this is rare.

My big concern at the moment is that sustainability has been turned into a commodity by big brands - and traded like another commodity - because that's what big brands do, absorb it into its business model. And then they think they have acted sufficiently. When of course this is an illusion.

### **2. IN MY VIEW SUSTAINABLE FASHION EDUCATION IS A MUST IN THE FASHION CURRICULUM, WHERE DO YOU SEE THE MOST EFFECTIVE EFFORTS IN EDUCATION BEING DONE?**

K.F. Probably LCF and Parsons in NYC

### **3. ARE THE YOUNG FASHION DESIGN GRADUATES LACKING A PROPER SUSTAINABLE FASHION EDUCATION?**

K.F. Absolutely.

### **4. DO YOU THINK THESE GRADUATES SEE SUSTAINABLE FASHION AS A TREND? WOULD THEY UNDERSTAND THE COMPLEXITIES OF A CHANGE OF PARADIGM?**

K.F. I don't imagine they even see it as a trend. They see it as a

'serious' and optional set of choices to make within the strictures of their current practice largely around materials and production. They fail to see that it is a different way of thinking.

**5. FOR YOUNG FASHION DESIGNERS IT SEEMS THAT THE ONLY WAY TO ADAPT TO THE MARKET IS TO DESIGN FOR A TRADITIONAL UNSUSTAINABLE FASHION HOUSE OR COMPANY. TO START YOUR OWN COLLECTION IS NOT ONLY VERY DIFFICULT BUT AT THE SAME TIME YOU MAY JUST BE ADDING MORE PRODUCTS TO AN ALREADY OVERSTOCKED INDUSTRY. IS THIS A CATCH 22 FOR DESIGNERS WHO WANT TO CHANGE THINGS?**

K.F. I think designers should see their skills differently. To look for opportunities to design by facilitating change or design by educating people rather than just using design skills to create more products. But if they do want to do that, then there are many challenges associated with working in a big company that you philosophically you don't agree with, just like there are for designing a small collection.

**6. CAN WE CLOSE LOOP AND MAKE THE FASHION INDUSTRY CRADLE TO CRADLE INSTEAD OF CRADLE TO GRAVE? ARE WE DOING ENOUGH?**

K.F. I think Cradle to Cradle is a useful idea though it doesn't acknowledge that we need to make sacrifices. We need to steer cradle to cradle projects, direct them with tough moral questions.

Interview with **KIRSI NIINIMÄKI**

Niinimäki is a Post doc researcher at Aalto University, School of Arts, Design and Architecture. She is a member of NODUS a sustainable design research group. In December 2011, Niinimäki defended her doctoral thesis dissertation titled: From Disposable to Sustainable. The Complex Interplay between Design and Consumption of Textiles and Clothing.

**1. IN MY VIEW SUSTAINABLE FASHION EDUCATION IS A MUST IN THE FASHION CURRICULUM, WHERE DO YOU SEE THE MOST EFFECTIVE EFFORTS IN EDUCATION BEING DONE?**

K.N. Sustainable design is still emerging in fashion education. Sustainable product design course offers some principles. Students also get some basics during the material course.

**2. ARE THE YOUNG FASHION DESIGN GRADUATES LACKING A PROPER SUSTAINABLE FASHION EDUCATION?**

K.N. Yes

**3. DO YOU THINK THESE GRADUATES SEE SUSTAINABLE FASHION**

#### **AS A TREND? WOULD THEY UNDERSTAND THE COMPLEXITIES OF A CHANGE OF PARADIGM?**

K.N. Many of them are interested in this field and many MA theses have already been done in the sustainable fashion field. Yet the problems in fashion field are many and complex so overall understanding is still on the surface level.

#### **4. FOR YOUNG FASHION DESIGNERS IT SEEMS THAT THE ONLY WAY TO ADAPT TO THE MARKET IS TO DESIGN FOR A TRADITIONAL UNSUSTAINABLE FASHION HOUSE OR COMPANY. TO START YOUR OWN COLLECTION IS NOT ONLY VERY DIFFICULT BUT AT THE SAME TIME YOU MAY JUST BE ADDING MORE PRODUCTS TO AN ALREADY OVERSTOCKED INDUSTRY. IS THIS A CATCH 22 FOR DESIGNERS WHO WANT TO CHANGE STATUS QUO?**

K.N. Many have started their own small company and they lean strongly on sustainable fashion so the trend is changing (check for example vihreät vaatteet webpage).

#### **5. CAN WE CLOSE LOOP AND MAKE THE FASHION INDUSTRY CRADLE TO CRADLE INSTEAD OF CRADLE TO GRAVE? ARE WE DOING ENOUGH?**

K.N. I think that change will come while in the EU level legislation is tightening (for example producer responsibility and waste issues).

#### **6. HOW MIGHT THE ROLE OF A FASHION EDUCATOR CHANGE IN THE FUTURE WHEN IT COMES TO SUSTAINABLE FASHION?**

K.N. More research and new knowledge is needed. So we need more researchers + teachers also in the field of fashion to offer new understanding and newest information to students.

#### **7. AT AALTO DO YOU FORESEE ADDING A SUSTAINABLE FASHION DESIGN PROGRAM?**

K.N. Maybe in the BA or MA.

K.N. Hard to say. I do believe that sustainable design will anyway be one of the main focus areas in Aalto (in teaching and in research) so it also has to enter in the fashion teaching.

## **Appendix 4**



Interview with **JUAN P. HINESTROZA**

Technology driven advances within the textile industry are being done as a promise of a bright sustainable future. Future scenarios discussed at 1991's Nanotechnology conference are presently in the making. Hinestroza Research Group, Textiles for Nanotechnology Laboratory at Cornell University in New York is working on the development of smart textiles through nanotechnology. Scientist Juan P. Hinestroza, its director, believes firmly in the immense possibilities of scientists and designers' working together, which, for him, qualifies as a paradigm shift.

### **1. HOW DO YOU VIEW THE COOPERATION BETWEEN SCIENTISTS AND DESIGNERS?**

J.H. That union brings positive results. There are two different ways of thinking about economic processes. Look at different times holding a designer, minimize the amount of materials and processes.

### **2. HOW DO YOU VIEW THE RESPONSIBILITY OF THE DESIGNER IN TODAY'S GENERATION?**

J.H. Replace with human energy electric transport sites in the environment both great responsibility as Global generations understand that this is shirt comes from Vietnam, made for the Gap, where everything is connected, you can't force people to buy only local garments, they understand this production and have grown up with it, therefore is the responsibility of the designer to make it locally.

### **3. HOW CAN TECHNOLOGY MAKE PROCESSES MORE SUSTAINABLE AS WITH TEXTILES?**

J.H. For many reasons technology can control current inefficient finishes on fabrics. We can work Nanoscopic molecular forces over large amounts of surfaces, where that knowledge allows you to design more efficiently. You would not have to do dye washing. Materials would not become dirty therefore the use of water would be minimized or not used completely.

### **4. YOU HAD MENTIONED THAT COTTON COULD ACQUIRE MORE VALUE, HOW CAN THIS HAPPEN WITH NANOTECHNOLOGY?**

J.H. For cotton nanomaterial can add value towards their harvest. That value is added for the farmers. Although a higher cost will not change inefficient processes nor make them more sustainable.

Its not something new, but it would be a way to support cost barriers and fluctuation in prices. The time is now to treat a profitable market

for the consumer. Also change the textile equipment's and make them more efficient, change the thinking patterns of big companies.

## **5. HOW DO YOU SEE A CHANGE PARADIGM HAPPEN?**

J.H. With education by adding knowledge. In the 90's we saw something so old could be affected and influenced by changing the paradigm. The reason I started working with materials such as textiles, I saw an opportunity with lets say the shirt I was wearing, to see the molecular processes. I could create a new perspective for the textiles, and industry that is based in 150-year-old processes. Nanomaterials could become that change of paradigm. Consequently I was offered to work for that industry and create thousands of meters but as I view that change of paradigm is though my teaching and doing research is how I am can create that shift. As what we are seeing at Cornell where we are integrating technology, business and design in one space, that is a change of paradigm within a very traditional university.

Interview with **RIIKKA RÄISÄNEN**

In 2002, Riikka Räisänen, presented her doctoral thesis Anthraquinones from the Fungus *Dermocybe sanguinea* as Textile Dyes at the University of Helsinki, based on her study of obtaining natural dyes from fungi and mushrooms. Räisänen's findings and thoughts were recorded in a personal interview held at the University of Helsinki in February 2012.

## **1. HOW CAN WE WORK WITH SUSTAINABLE PROCESSES WITHIN THE TEXTILE INDUSTRY?**

R.R. Substantial reduction in the consumption of raw materials and energy, also work with labor and environmental costs. But without global co-operation end result will be relocation of sources of pollution rather than reduction.

## **2. WHERE DO YOU SEE THE MAJOR ENVIRONMENTAL PROBLEMS IN TEXTILES?**

R.R. It is within dyeing as the removal of dyes from effluents. With fashion textiles for example dark colors increase the amount of effluents. Modern textiles have high degrees of chemical and photolytic stability in order to maintain their structure and color. There needs to be more environmental criteria and more environmental auditing. Also, analysis of the products and processes with a life cycle approach. I would suggest through eco labels, which marks the quality.

## **3. HOW HAS YOUR RESEARCH IN NATURAL DYES INFLUENCE INDUSTRIAL PROCESSES?**

R.R. This research served as a pilot study for the application of pure natural Anthraquinones Aglycones as textile dyes. Of the many interesting subjects for further research, the following would be the most interesting: conceptualize, examine, and implement ways to incorporate natural dyes in textile. Make more Instrumental case studies based to address the environmental needs and competing views.

#### **4. DID YOUR NATURAL DYE RESEARCH HAVE BEEN USED BY FINNISH TEXTILE AND FASHION DESIGNERS?**

R.R. In my opinion the most research shows the waste of material from as an example the forest industry (Finland). We could use the weeds. Or bacteria, fungi, for the example. Some recent articles show it has been used. Expert Harold Freedman, a pioneer, says it is just starting to recognize it in Finland, but financing is needed. It has never dyed out, in Finland is too expensive, even though the prices went down fast with collapse of USSR, Finnish labor costs became very high. There is some local production but most of it left to Latvia, and Eastern Europe. The process of dyeing is at a small artisanal scale.

#### **5. IN YOUR VIEW HOW DO YOU SEE THE FASHION INDUSTRY WORKING INTO THEIR PRACTICES NATURAL DYES?**

R.R. It's not possible to get the whole sustainability thing, as with the environment it's so complicated.

#### **6. IS IT REALLY A SUSTAINED BUSINESS IN YOUR VIEW AS A NATURAL DYE EXPERT IS IT POSSIBLE TO MAKE THAT TRANSITION INTO SYNTHETIC DYES?**

R.R. Niinimäki questionnaires' about eco fashion found that it looks too eco, it still is an added value. Somehow be more recognizable, artisanal working with designers

#### **7. WHAT NEEDS TO CHANGE IN YOUR VIEW?**

R.R. We are doing the right steps, but there are a lot of questions with third world countries, as in India and Indonesia. If we want to increase the products as mass products on a bigger scale, then what products from richest countries would find interesting? Still look quite ethnic. It must fit to the western context; to go on a bigger scale fashion houses must be involved with the sustainability as well.

## **Appendix 5**





## International Regulation and Labeling

In addition, regulations and labeling strategies are giving a framework for conditions to be implemented internationally. With increasing globalization, there is a need to follow sustainable models to create an eco-friendly global business.

Another emphasis of the designers interviewed was the need for government policy makers and institutions to adopt sustainable models, in order to help fashion create the change towards a greener industry. A suitable example of this effort is The Sustainable Apparel Coalition (SAC), created in 2011 by leading apparel and footwear brands, retailers, manufacturers, non-governmental organizations (NGOs), academic experts, and the US Environmental Protection Agency. SAC works on sharing a vision of sustainability, measuring and evaluating its environmental impact, communicating innovations in sustainable technological practices, and identifying measures for improving social and environmental practices throughout the supply chain stated by Coalition, S. A. (2011). The members of the coalition include H&M, Adidas, Levi Strauss & Co., Nike, Patagonia and many others from North America, Europe, and Asia. Other examples are the Department for Environment, Food and Rural Affairs (Defra) in the United Kingdom, the Nordic Initiative, Clean and Ethical (NICE), the Swedish Chemicals Agency (KEMI) and the Swedish Environmental Protection Agency (EPA).

Even though there are many eco-labels, thus an imperative facet of international regulation is through labeling.<sup>36</sup> Labeling enables direct consumer participation, where the purchaser's drives the market trust in how environmentally "good" a product is. Nordic Swan has had success in Nordic countries. The Nordic Swan label originated in 1989 with the Nordic Council of Ministers, having a four-winged symbol, which represents Sweden, Finland, Norway, and Iceland (Ecolable, 2012). Denmark later joined and does not have a wing symbol referred from. The Nordic Swan is a leader in global labeling and covers more than 2000 licensed products. Applying for the label license has a cost of €1,200 (\$1,592.15) (ibid.). Applicants are reviewed thoroughly using

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36 A survey of the textile and apparel labels presented on Ecolabelling.org show that most of the certifications presented are not textile-specific, only 16 of the 38 VERMEER, D., CLEMEN, B., MICHALKO, A., NGUYEN, D., NOYES, C., AKELLA, A. & BUNTING, J. 2010. An Overview of Ecolabels and Sustainability Certifications in the Global Marketplace. In: GOLDEN, J. S. (ed.). Durham: Nicholas Institute for Environmental Policy Solutions Duke University.

lifecycle analysis. LCA's standard criteria require that applicants must answer questions, such as whether there is a serious environmental problem connected to the product; whether there is an opportunity for improving the product's environmental performance; and whether a Nordic Swan Ecolabel may impact the product's development to be more environmentally friendly? Products that are used by many and in massive quantities are subject to numerous standards (ibid.). The problem is that not having enough clear information makes it difficult for the individual to take an informed stance by knowing what to expect. Eco-labels can meet the requirements of a consumer who is informed and aware of what is purchased. The eco-labels are suitable for an informed, "eco-friendly" consumer.<sup>37</sup>

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37 Key findings of ecolabels: 1) The three most important issues that textile and apparel ecolabels cover are human health and safety (i.e., Oeko-Tex), environmental pollution (i.e., GOTS), and worker's rights (i.e., Fair Trade). 2) The labels that have emerged or are emerging as leaders in this space have one key thing in common—they all aim to cover the entire supply chain for textiles and apparel, from raw materials through cut-and-sew operations. 3) An additional benefit of this full-supply-chain perspective is that it allows for the creation of supplier networks specific to each ecolabel, which in turn increases the ease of doing socially and environmentally responsible business and helps make these movements self-sustaining. 4) An ecolabel may avoid individual countries' highly politicized debates about what standards should be set in national policy by following the Oeko-Tex model, in which the label's standards are more stringent than those of any given country. Convening independent standards advisory council of verifiable experts is key to such an effort. 5) For issues for which ecolabels are highly fragmented and numerous, the GOTS model of bringing people involved in the multiple existing labels together to discuss a uniform global standard to replace multiple labels is prudent. This kind of global participatory effort increases not only the legitimacy of the resulting ecolabel, but is also likely to drive adoption, as each of the agencies involved in developing the global label then becomes an exclusive promoter of the global label VERMEER, D., CLEMEN, B., MICHALKO, A., NGUYEN, D., NOYES, C., AKELLA, A. & BUNTING, J. 2010. An Overview of Ecolabels and Sustainability Certifications in the Global Marketplace. In: GOLDEN, J. S. (ed.). Durham: Nicholas Institute for Environmental Policy Solutions Duke University.



